IRON AGE

THE NATIONAL METALWORKING WEEKLY A Chilton Publication JANUARY 12, 1961

★ Under Secretary F. C. Scribner, Jr., Interprets:

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How Good Is Inventory Data? p. 36

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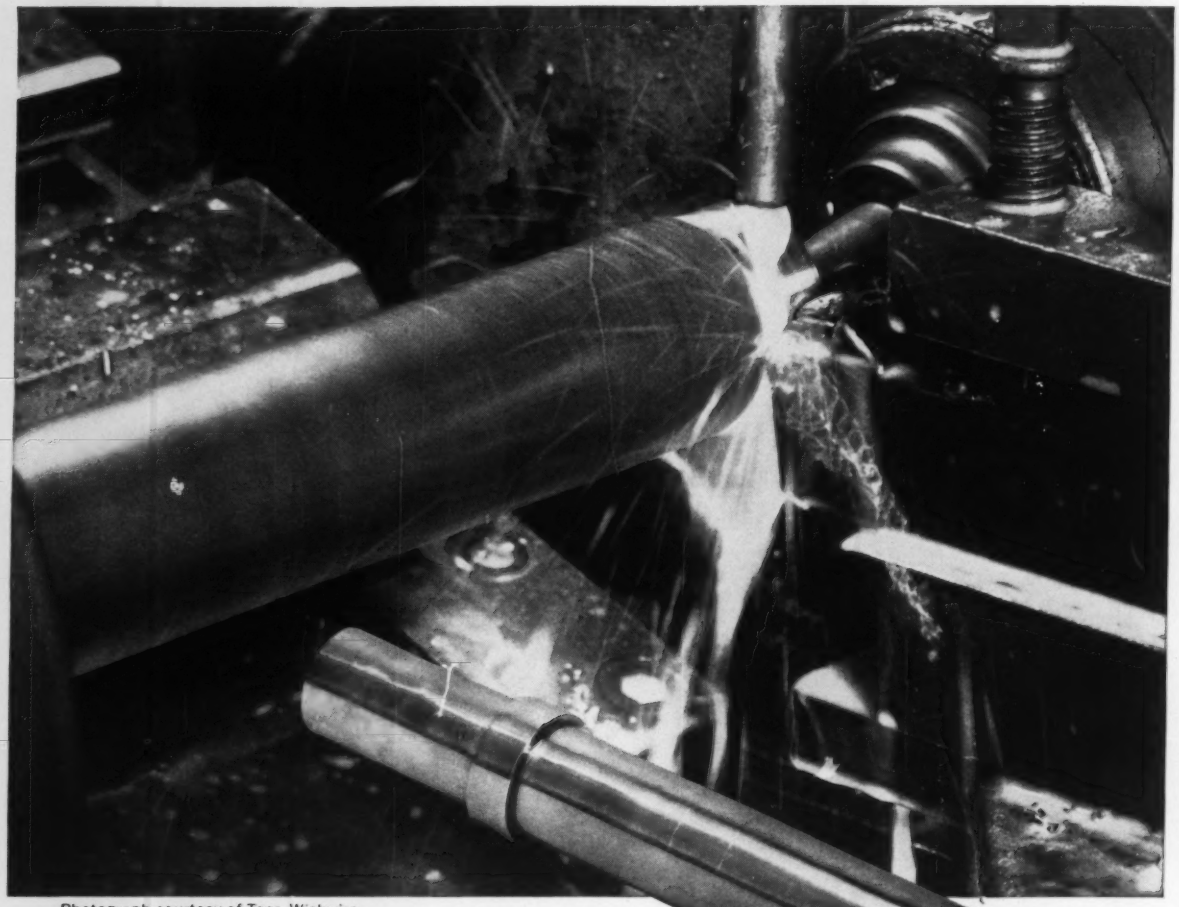

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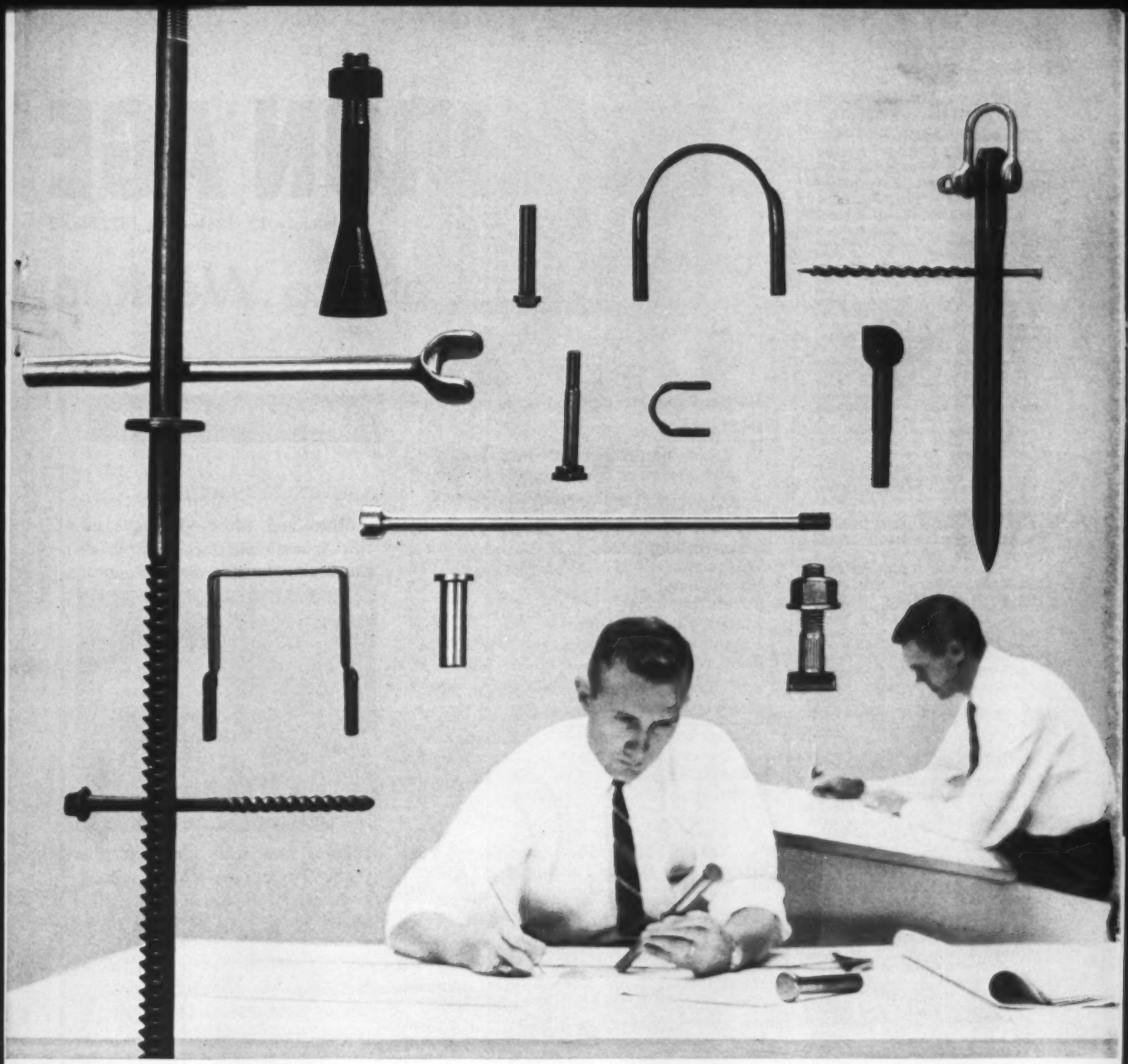

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January 12, 1961—Vol. 187, No. 2

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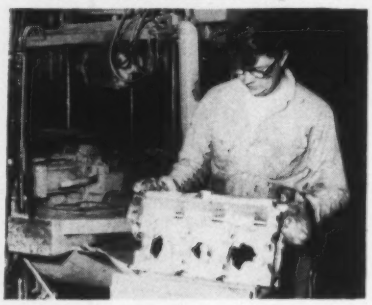
News of the Industry

ALUMINUM IN AUTOS

More and More—The average 1961 automobile uses 62.8 lb of aluminum. But one metal producer



believes this will double in five years. Three new alloys, suitable for bumpers, will aid in reaching this goal. P. 34

DEPRESSED AREA AID

Fast Action Due—Already, Congress is pushing through a bill to aid depressed areas. Action planned: Development loans, public works, more plants, and fast tax write-offs. P. 35

INVENTORY DATA

How Good Is It? — The wellspring of most inventory data is the Commerce Dept. But there are cautions to follow in using this data. A top government statistician tells why. P. 36

ORE CONTROVERSY

Will it Grow? — Steel mills are getting a growing portion of their

Metalworking

Cover Feature

DEPRECIATION SURVEY—Industry is willing to give up certain advantages in return for faster depreciation. Under Secretary of the Treasury Fred C. Scribner, Jr. comments on preliminary report of Treasury's survey. P. 31

iron ore from foreign sources. And domestic producers can only look forward to a lean year in '61. Mills have large commitments and investments overseas. P. 39

NEW STEEL MILL

Big Loan—A record DLF loan of almost $130 million has financed the first half of a new steel mill in Turkey. Three U. S. companies are actively involved—Koppers, Westinghouse, and Blaw-Knox Co., forming Koppers Associates. P. 39

Engineering-Production Developments

GLASS-METAL TEAM

Resists Heat — The addition of glass boosts the high-temperature strength of aluminum, lead and zinc alloys. In terms of strength-to-weight ratios, some aluminum-Fiberglas composites compare favorably with stainless steel and titanium up to 800°F. P. 57

FAST SPINNING ACTION

Polishes Odd Shapes — Spin finishing has replaced costly hand buffing for odd-shaped automotive parts. In essence, the process simply power spins parts through a dry, granular compounds such as cob meal. This setup polishes complex, delicate shapes that can't withstand a tumbling action. P. 60

MONORAIL SYSTEM

Absorbs Finishing Line—Automation is the byword in a plant that sends parts through processing without ever leaving a monorail system. Plating machines receive carriers from a power-and-free conveyor system. Plating quality is up; handling is down. P. 62

GIANT FORGING PRESS

Lifts Size Limits—Until now, the size of closed-die forgings was limited by press capacity. Breaking this stalemate, a massive press features a 20,000 ton capacity. In addition to high-temperature stainless steels, the new press handles molybdenum, columbium, and other exotic alloys. P. 66

WELDED TITANIUM TUBES

Curb Corrosion—Titanium's corrosion resistance offers use in process industries. But it must be welded with care. A low-cost device insures gas protection. P. 68

Market and Price Trends

AUTOMOTIVE

More Compacts—Ford plans two more compacts besides its small-car program. In other news, front wheel drive draws interest for small cars in Detroit and Europe. P. 45

WEST COAST

Steel Upturn Expected — Increased orders for Farwest mills are expected in second quarter by J. D. McCall, president of Columbia-Geneva Steel. P. 47

MACHINE TOOLS

Machining Data Center—A research company is branching out to provide a central source for machining data and the characteristics of space-age materials. P. 49

STEEL SUMMARY

Trend Is Mystery — Just how strong a recovery and when it will come still aren't apparent. There are a few signs of improvement, but there are enough minus factors to offset expected gains. P. 87

PURCHASING

Trend-Bucker — Makers of big presses are bucking current trends in the industry. Sales are good and prospects are that 1961 will remain an active year if prices remain stable. P. 88

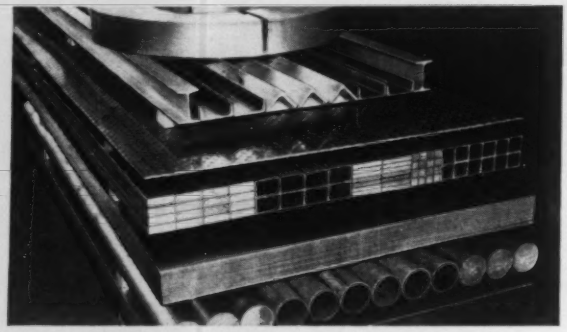
NEXT WEEK

STRUCTURAL AUTOMATION

Moves Ahead—Structural fabrication took a big stride forward with a mechanized-handling system for sections up to 80 ft long. This system applies automation to welding, drilling, reaming and painting of heavy structural members.

5 WAYS TO . . .

stretch aluminum-buying dollars



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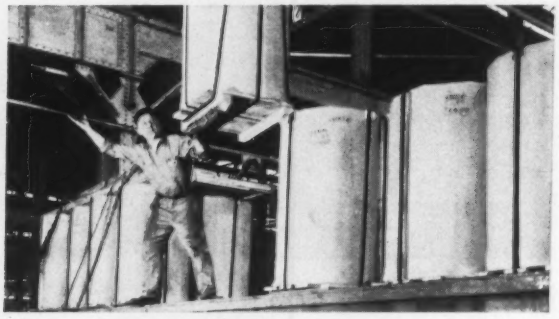

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V. P. of World Affairs: You May Have Use for One!

Topsy-turvy world affairs are here to stay. They will affect every business in our nation, in some way or other.

One day we may hear disturbing news from South America. Next time it may be Asia. A week later it may be in our own backyard.

No matter how we try to wrap ourselves up in a wishful cocoon, it won't work. If there is trouble in Cuba, it makes sugar problems. If there are sugar problems, there are sugar machinery problems, investment problems, and so on.

If Brazil has troubles, we have ours in coffee. If we have them, those who service or in any way supply, move, grind, roast, or drink coffee, also are affected.

If we treat the Canadians shabbily by damaging their normal ego, we will be affected some way or other. That it might be hard to pinpoint does not mean harm hasn't been done.

Assume the Japanese attempt to curtail some of their exports to the U.S.A. Suppose, then, some of our businessmen act on this assumption. But suppose Hong Kong quickly—and quietly—takes up the quota given up by the Japanese. We are affected here too.

Maybe some of our people spent vast sums of money in one country to develop raw materials. Now another project with lower wage costs opens up. That affects us. It affects the first project and it ultimately affects the new project.

Of course, this is international industrial life. The newspapers and magazines do a top notch job giving us the facts. But there is a need for something more than just facts or a general interpretation of those facts.

There have to be detailed interpretations of events in the world as they affect each business venture, as they affect each trend of business here, as they affect labor-management relations, and as they affect our world competitive position.

That is a large order. We have foreign-subsidiary presidents who are hep to what goes on. Their reports are excellent but not always heeded.

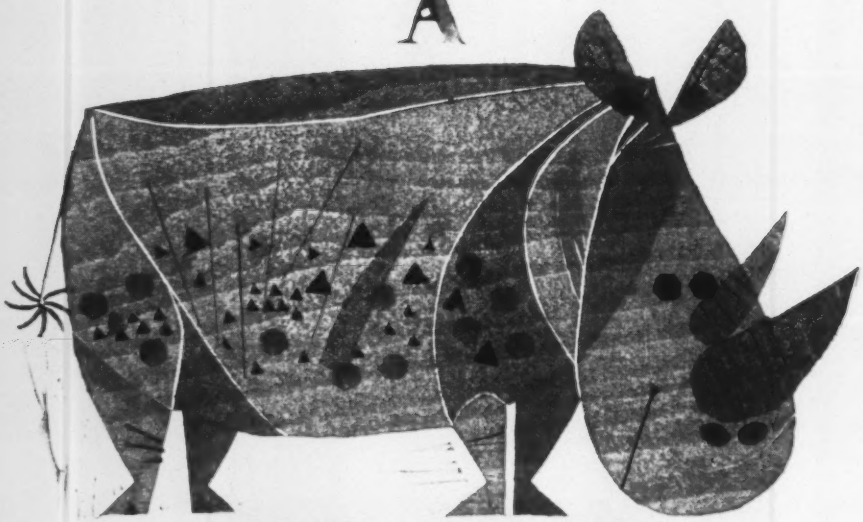
We do have domestic presidents, vice-presidents, and others flying around the world—on two or three-week jaunts. That too is necessary.

What many businesses probably need at home is a vice-president of world affairs. His tough job would be to relate world news, events, happenings, trends, and crises to his own company's activities. This sharp and global-minded man will be common—sooner than you think!

Tom Campbell

Editor-in-Chief

WHAT HIDE IS TO A



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Inventory Liquidation: At an End?

The extent of determination to cut down stocks of materials is indicated in Dept. of Commerce inventory figures. For November, factory stocks were cut back some $300 million, mostly in durables. This followed an even bigger inventory cut of $400 million in October. At the end of November, all manufacturing inventories stood at $54.1 billion.

But, at the same time, retail inventories gained $200 million, with the increase all in the durable goods. Nondurables held level. (For more in inventory statistics, see p. 36.)

Auto Output to Be Cut Back

Unless sales increase, production cutbacks of every U. S. automaker can be looked for during the first quarter of 1961. All are contemplating schedule adjustments to reduce stocks of slow-selling models.

This doesn't mean there is an over-supply of all models. Among those in short supply are the Chevrolet Impala, Corvair Monza, Ford Falcon, and Mercury Comet. But some companies are struggling with 70 to 90-day inventories of new models. This tends to confirm union statements that thousands of auto workers will be laid off with more on short workweeks before the end of January.

Is Europe Headed for a Recession?

A lot of signs point to a 1958-type recession brewing in Europe. Part of it may be a reaction from the current "correction" in the U. S. But there are other signs, principally some spottiness in European auto production, which, like in the U. S., is a major supporter of the economy. The auto business in Europe is off, and many believe the Continent followed the traditional U. S. pattern of over-expanding. Overall, however, Europe is in a long-term period of good business, with new products, higher wages, and a yearning for a higher standard of living all contributing.

Construction Did Well in '60

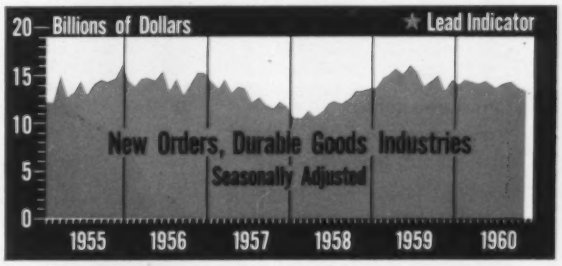
Despite the business turndown, construction spending was at near-record levels in 1960, the Dept. of Commerce reports. Value of new construction put in place was $55 billion, 2 pct below the record $56.2 billion spent in 1959.

During December, new construction totaled $4.4 billion, based on preliminary estimates. This was 9 pct below the previous month, but only 1 pct below December, 1959. The decline from November to December was seasonal.

New Orders Continue to Lag

The relationship of new orders to sales, particularly in the sensitive durable goods area, is not encouraging.

The theory is that new orders will lead sales in a recovery period. But the trend is still down, with new orders lower than sales. This would indicate the recovery is still some time in the future.

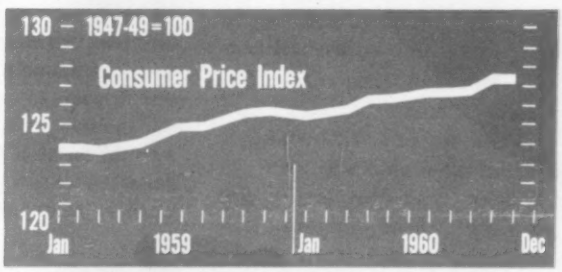


New orders, according to Dept. of Commerce figures, were off less than 1 pct during November. But in durables, the seasonally adjusted figure dropped from $13.74 billion to $13.47 billion. Sales in durable goods industries dropped from $14.08 billion to $13.75 billion.

Are Prices Leveling?

A tiny 0.1 point increase in the consumer price index in November (127.3 to 127.4) may be the beginning of a leveling in prices. In fact, there are a few signs of deflationary tendencies on the basis of some price cuts lately.

In fact, durables dropped 0.2 of a point during the month, indicating the hard going in that area. In most



of the groups that make up the total price index, restraint is evident. Some exceptions that seem never to stop climbing: Medical care, transportation, both public and private. On the strength of the small climb, the purchasing power of the dollar remained unchanged for wholesale prices. The outlook: Little change, possibly declines early this year.

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BEAR Abrasives

AFL-CIO: Unions Set Legislative Goals

Executive council of the AFL-CIO has drawn up a 20-point program of legislation for Congress and the new Administration. Most of the proposals have been seen before, but some new ones have been added.

In its statement, the Council claims "America is in an economic recession, the third in seven years and potentially the most severe."

AFL-CIO president George Meany says no proposal has priority over others. But he admits the council showed most concern over the first five: Federal aid to depressed areas, stepped-up action in housing and urban renewal, aid to education, increased and extended minimum wages, and health benefits for the aged.

Other key proposals call for: Expanded unemployment insurance, tax revision for economic growth, expanded public works, comprehensive labor legislation, situs picketing, and natural resources development.

Tough Year Predicted For Bargaining

Labor can expect a year of tough bargaining in 1961, according to Associated Industries. Other predictions by the Cleveland labor relations group are:

The auto industry settlement with the United Auto Workers will be the key figure for manufacturing.

Management will continue to demand and win concessions.

Cost of living escalation may be on the way out after its serious setbacks last year.

Annual wage increases will be under attack, especially by companies facing foreign competition.

The Cleveland labor relations group says of 1961:

"It will be a year of hard bargaining. In the early months of the year, more small and medium-sized companies will be able to negotiate settlements."

McNamara Takes Labor

Senate Labor Subcommittee chairmanship has been grabbed off by Sen. McNamara (D., Mich.) in a surprise move. Despite the fact he once headed a Pipefitters local in Detroit, he was expected to take the Education Subcommittee and leave Labor for Sen. Morse (D., Ore.). Switch may have been made to soothe building trades unions.

1960 Was Year Of Labor Peace

The past year was one of the most peaceful years in labor-management relations in the postwar period, according to preliminary estimates of the Bureau of Labor Statistics.

About 3300 work stoppages began in 1960, lowest total since 1942. These stoppages involved about 1.4 million workers, matching the 1957 postwar low.

Man-days lost due to strikes were about 20 pct higher than 1957, but lower than in any other postwar year.

USWA: Meeting Falls Short

Two points emerged from USWA president David J. McDonald's attempt to set up a union-top management conference on steel industry unemployment:

First, Mr. McDonald again failed to meet with the chief executives of the steel companies. Instead, he was forced to meet by Conrad Cooper, U. S. Steel executive vice president and industry chairman of the joint Human Relations Committee.

Second, little of record was accomplished. The session adjourned with no date set for new meetings. There was some feeling that they may get together early in February.

In asking the session with the heads of the major steel companies, Mr. McDonald renewed his attempts to meet on the same level with company leaders. Apparently, the industry will continue to meet Mr. McDonald only through its bargaining unit. It's no secret that the union president is smarting under these conditions.

There is no question that Mr. McDonald (as is the industry) is seriously concerned about steel unemployment. He is further concerned by cutbacks in SUB payments. But he is also looking for a sounding board that would be provided by meeting with top steel leaders.

Mr. Cooper, following his meeting with union leaders, urged the USWA to join in seeking ways of aiding a "constructive program of attack" to solve steel unemployment. Principal points would involve attacking antiquated tax laws and high costs of production, "which impair the companies' ability to compete with foreign steel producers and . . . competitive materials."

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★ Antitrust: Even Tougher in '61

The "get tough" policy of government antitrusters in 1960 will get even tougher in 1961.

Federal antitrust activities will be given sharper teeth under the new Kennedy Administration. Business will feel the bite of these teeth in the form of new legislation, growing Justice Dept. powers, and broader administration actions.

In the legislative field, a number of antitrust bills to shackle industry operation will be aired in Congress. One measure, backed by the Justice Dept., would require advance notice to Federal agencies of corporation mergers. Another would give the Justice Dept. power to seize industry records on suspicion of antitrust violation. Still another bill would require public hearings on price and wage increases which appear to threaten the nation's economy.

On the executive side, President-elect Kennedy's plans for Federal agency reorganization point to increased antitrust activity.

James M. Landis, Mr. Kennedy's new agency overseer, wants to transfer antitrust activities of the Federal Trade Commission (not including Robinson-Patman Act jurisdiction) to the Justice Dept. He believes Justice would be more powerful than the FTC in antitrust actions.

Even the House Small Business Committee is calling for stricter antitrust action. The committee says a high degree of market concentration in small business is the result of extensive merger activity. In this area, the committee says, "antitrust agencies should look for possible violations of our antitrust laws."

The new year, then, will see even more enforcement than 1960. And 1960 was tough. According to a Justice Dept. report, last year saw the initiation of more than 90 antitrust cases—"a new postwar high."

■ Will Congress Pass Kennedy Program?

President-elect John F. Kennedy's top priority legislative program may not fare as well as he hopes. The five point program he wants Congress to approve soon after his inauguration next week will be a test of the new President's strength. Here is the program and what to expect:

1. Depressed areas—New Federal programs to help chronic unemployment areas are the only part of the program which will probably get quick approval.

2. Federal aid to education—Grants to local communities for school construction and teachers' salaries will be opposed by some because of the salary aid angle.

3. Minimum wage—An increase from $1 to $1.25 in the hourly minimum and coverage for more workers will meet House opposition. Moves to cut it down to $1.15 with less coverage will be made.

4. Housing — Conservatives in the House may balk at more federal funds for slum clearance and more money for other programs.

5. Medical Care for the Aged—House, again, may delay putting benefits for elderly persons in the Social Security Program.

■ More U.S. Defense Gear May Go to NATO

U. S. industrial production going into the North Atlantic Treaty Organization may soon be increasing. It all depends on outcome of U. S. offers to provide NATO with Polaris-armed nuclear submarines and agreements to build more NATO planes. The NATO jet building program will produce about 1000 fighter planes. The U. S. will supply component parts to the plane construction program.

■ Congress Studies Patent Protection

Congress is studying the problem of protecting privately-owned patents on technological information the government shares with allies.

Preliminary studies undertaken by the Senate Subcommittee on Patents call for further study of problems connected with the interchange of technical information. Some of the information is patented or patentable; some falls in the category of trade secrets and "know-how."

The danger lies in unauthorized use or release of the information, difficulty in obtaining dollar payments, and inadequacy of commercial relationships between private parties in different countries.

■ Pipeline Jobs In FTC Bottleneck

More than $100 million worth of steel construction programs are being held up by Federal Power Commission rate setting delays. This charge comes from the new federal regulatory agency overseer, James M. Landis.

Landis says "delays in the establishment of rates for the transportation of gas are holding up programs for expansion which involve over $100 million of steel construction, which in the light of the present employment of our steel capacity means much to the steel industry and the unemployment situation."

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The blades that outlast all others!

A RADICALLY NEW METALLURGICAL APPROACH builds unprecendented durability into Heller "Ultras". That's why they're certain to outlast all high speed steel band saws currently used in production cut-off work on ferrous metals. **IMPROVED IN EVERY WAY!** Special steel analysis . . . more advanced production methods . . . closer heat-treating control . . . stronger welds . . . more exacting 100% inspection! No wonder Heller "Ultras" deliver up to 300% more cuts per blade. Yet, the price is only 10% higher. This means as much as 75% savings in cutting costs.
TESTS CONFIRM THEIR SUPERIORITY! Matched against all comers, at heavy feeds and higher speeds, the harder teeth, tougher bodies and more uniform full-blade flexibility of Heller "Ultras" are sure bets to win the race against time and costs. Seeing's believing!

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HIGH SPEED STEEL
metal cutting
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November Exports Hit Three-Year High

United States exports in November totaled just better than $1.7 billion—a three year high.

According to Dept. of Commerce statistics, this tops October's $1.69

billion and November, 1959's $1.4 billion. Exports in the third quarter reached a seasonally adjusted annual rate of $20 billion, nearly a third above the low recorded in the first quarter of 1959.

In contrast to exports, third quarter imports dropped to a seasonally adjusted annual rate of $15 billion. This is the lowest annual rate since early 1959. These developments raised the nation's trade surplus to an annual rate of $5 billion—also a three year high.

The Office of Business Economics attributes the improvement in the overall surplus to favorable trade developments. It tags several major areas as prime movers behind this expansion. Among these are:

1. Rising exports and declining imports in the U. S. steel industry.

2. New records for aluminum and copper exports.

3. Expanded deliveries of commercial aircraft to foreign carriers.

4. U. S. compact cars have brought about a decline in automotive imports.

5. A large expansion in the export area of steel scrap.

Credit is also being given by some Washington officials to the export promotion activities spurred by President Eisenhower's campaign to balance the national income and outgo.

Ruhr Valley Invites U.S. Manufacturers

While most European Common Market industrialists are concerned about the influx of foreign capital, one West German area is inviting it.

The government of the state of North Rhine Westphalia recently established the Rhine-Westphalia Industrial Development Co.

Its aim: To aid foreign companies, particularly those from the United States and Canada, to settle in this area. The agency will provide information and advice on suitable manufacturing sites, help recruit labor, and, in some cases, give financial assistance.

The particular area is part of the Ruhr Valley where there are already heavy concentrations of coal and steel operations. But the economy lacks a balance. The new agency aims to correct this.

DLF Takes American System Abroad

The U. S. Development Loan Fund, now three years old, has already loaned $1.8 billion—half of it in 1960. Current practice under able director Vance Brand has been toward taking the U. S. free enterprise system abroad — lock, stock and barrel.

There's been a dip in lending to socialistic—or state-supported—institutions.

Result: U. S. bankers abroad now report a much better environment for American private enterprise in such countries as Turkey and India.

However, unless Congress acts quickly, the DLF will go broke. The fund, which provides money on easy credit terms to less-developed nations, will be out of money by the end of the month.

Before he leaves office, President Eisenhower is expected to ask Congress to approve a supplemental appropriation of $150 million for the fund. President - elect Kennedy is also expected to increase DLF appropriations when he submits the revised budget.

IFC Investments Up

Investments by the International Finance Corp. during 1960 were up some $8.4 million from 1959. Thirteen investments totaling $18.6 million were made by IFC in 1960. The corporation has now made 36 investments totaling $45 million in 17 member countries.

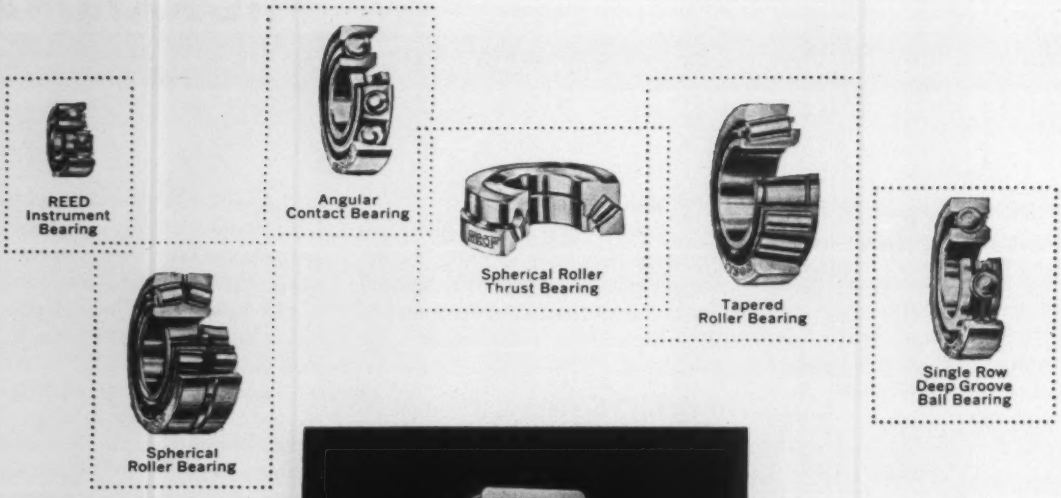
More Overseas Demand For Consumer Durables

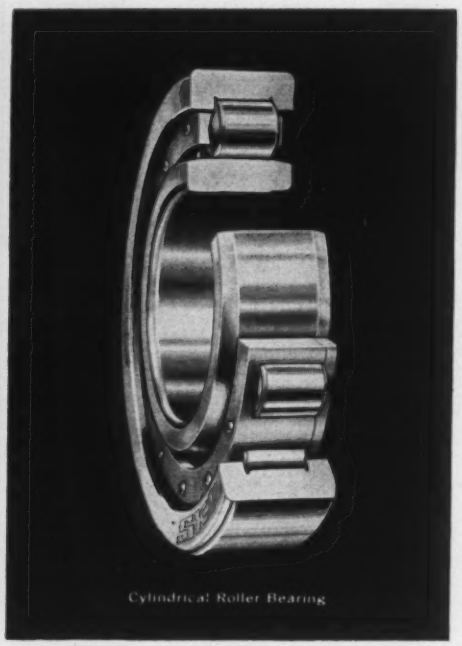
Booming demand for consumer durables throughout the world may sop up much of the new U. S. steelmaking and fabricating capacity.

The Dept. of Commerce says only 17 pct of French homes and 5 pct of Japanese homes now have refrigerators. This is compared to the 98 pct of U. S. homes with refrigerators.

However, import restrictions and foreign manufacturing plants have cut into the U. S. share of the world market. In 1939, the United States produced 90 pct of the world's refrigerators. In 1959, the U. S. manufactured only 37 pct of the world total.

West Germany has increased refrigerator production from 514,000 units in 1955 to 1.9 million units in 1959.



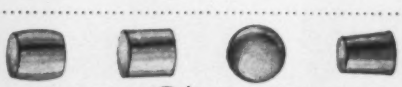


What's a "special size" in production bearings?

SKF makes so many standard sizes, there's practically no such thing as a "special size" of bearing. They range from tiny instrument bearings right up to four-row tapered roller bearings—and account for almost every possible bore size in-between.

Take SKF's standard cylindrical roller bearing, for example. It's promptly available in 154 sizes of single- and double-row types—for shaft diameters ranging from 1" to 9.5". Every size, in both types, offers high radial capacity in relation to its size and operates at highest speeds because of its very low friction.

So, before you specify a "special size" bearing, call the nearest SKF sales office first. The odds are better than 1,000 to 1 that there's already a standard SKF bearing of exactly the size you need. 6087



EVERY TYPE—EVERY USE
SKF
SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.

Aluminum Production

Two new processes produce aluminum directly from bauxite ores. These processes, developed in France and Canada, omit the alumina stage of conventional reduction. The Canadian process centers on high pressures in a temperature subhalide reaction. The French employ direct carbothermic reduction of aluminum oxides. Both processes reduce installation and production costs while boosting aluminum output.

High-Speed Vacuum Furnace

With a working area of 225 cu in., a new furnace operates at heats up to 5000°F under a vacuum of 1 x 10^{-3} mm Hg. Maximum temperature is reached in less than five minutes. This fast action eliminates out-gassing problems. Thus, the new furnace speeds research or production work while reducing vacuum-system costs.

Tinplate Protects Cables

Tinplate serves as a barrier to protect new telephone cables from moisture infiltration. To make these cables, 2121 pairs of fine copper wires are bound together with strong paper tape. Next a thin sheet of aluminum is laid around the core. This provides an electrical shield and lightning protector. Then high-speed machines wrap an endless ribbon of tinplate around each cable assembly at speeds up to 100 fpm.

Improves Cast Magnesium

Tests prove that magnesium melting should take place in a minimum number of pots, running at the fastest possible through-put rates. This lessens surface-area exposure as a function of time. It also reduces both metal loss and flux consumption. An ideal furnace for diecasting magnesium is a high-capacity low-frequency induction unit with a low rerun ratio.

Faster Metalcutting?

Experts say the whole field of high-speed cutting needs more research. Carbides and ceramics, available today, can yield low-cost cutting speeds much higher than those in general use. Future machining speeds with ceramics hinge on machine, workpiece and safety limits rather than tool limitations. When these problems are overcome, ceramics will serve wide metalcutting areas.

New Use for Furnace Gases

A new British process yields low-cost mixtures of nitrogen and hydrogen from blast-furnace gases. These nitrogen-hydrogen mixtures insure a truly inert atmosphere for bright annealing. Since carbon monoxide isn't present in the gas mixtures, soot doesn't form during cooling. This development allows blast-furnace gases to serve in the heat treating of steel strip or sheet.

Reduces Punch Inventory

A major appliance maker reports impressive savings in its punching operations. The company is using a new system of standardization for punch-point sizes. It is based on actual punching requirements. This company has reduced its former inventory of 196 diameters to only 17 sizes and has improved performance, too.

Prevent Recorder Smears

Smearing of wet ink by glass tear-off bars creates sloppy trace lines with strip-chart recorders. Plexiglass hemispheres, cut from ⅜-in. diam balls, solve this problem when fastened to the glass bars. Duco cement gives a good seal. The half balls hold the paper away from the bars without altering the bars' function.

Counter Diamond Shortage

Large diamonds, over a carat in size, have been made in General Electric's research laboratories. At present, these diamonds have structural imperfections which affect their mechanical strength. More development is needed before these large diamonds meet industrial needs. However, when GE perfects the mechanical structure and improves the strength of its new, carat-size diamonds, the company will be able to compete with natural stones in the full industrial range.

1,000 Feet of NORMALIZING LINE at Inland Steel

This is another major unit in the continuing expansion program of Inland Steel Company of Chicago. The line normalizes cold rolled mild steel strip, 16 to 24 ga., 24 to 60″ wide, at furnace speed of 50 to 125 f. p. m. 60,000 lb. coils are fed into the line and 40,000 lb. coils are handled at the delivery end. Shearing facilities included in the line are suitable for sheets from 36″ to 192″.

Aetna-Standard's experience with Processing Lines dates back to the earliest production of strip in coils. This experience includes the design and building of many Continuous Electrolytic Tinning, Annealing and Normalizing Lines, as well as Continuous Galvanizing Lines. Aetna-Standard Division, Blaw-Knox Company, 300 Sixth Avenue, Pittsburgh, Pennsylvania.

Aetna-Standard Division
BLAW-KNOX

Tariff Tangle

Sir—I was shocked to read in your issue of Dec. 22, an opinion of a New York banker, (John J. McCloy) pontificating that:

"Meanwhile, the 'peril point' and 'escape clause' provisions of the Reciprocal Trade Agreements Act have been greatly strengthened. These provisions limit tariffs to levels which restrict imports only to a small proportion of the domestic market. Also, they empower the President to raise tariffs on imported goods which seriously threaten domestic producers."

This statement is completely misleading because:

1. The "peril point" and "escape clause" provisions have not been greatly strengthened. If they had been, the majority of the applications to a sympathetic Tariff Commission would have had a much better chance for success.

2. If he means "a small proportion of the entire domestic market," he is avoiding the issue. The "escape clause" refers to specific injury to a specific industry and many, great and small, have suffered great injury because of the proportion of imports of their products to domestic consumption.

3. The empowering of the President to raise tariffs on imported goods which seriously threaten domestic producers has been made completely ineffectual by the free trade policy of this Administration. The President has approved a very small proportion of the many favorable recommendations of the Tariff Commission. His economic advisors have used every conceivable spurious excuse to deny justified relief.

Have you or this self-appointed tariff authority bothered to investigate the history of applications before the Tariff Commission to determine the facts upon which this opinion is based? In 1959, imported umbrellas took 54 pct of the domestic market. Do you consider this small? Does he?

A national and respected magazine like yours should report objectively and should investigate the basis of opinions and not blindly accept prejudiced opinions, designed to propagandize policies profitable to the author.—Irving P. Seery, president, The Newark Umbrella Frame Co., Newark, N. J.

▪ **This section of the President's Commission on National Goals was reported as presented by Mr. McCloy because it is an important subject. Recognizing that people and industries may be hurt, Mr. McCloy suggests that the government should help workers and employers where there is a possibility of serious long-term damage to an industry.—Ed.**

Steel Capacity

Sir—What is so sacrosanct about the percent of capacity of the steel industry? I cannot figure out if the low percent of capacity operations is due to over-capacity in the industry or low consumption.

We have enough wheat to supply the demand for 14 to 15 months. If production of wheat were geared to consumption and inventory, I am very sure we would have a very low percent of capacity.

Tell me the tons produced last week; tons produced the same week last year; tons produced the last four weeks; and the tons produced in the same period last year.

Leave the worry of capacity up to the industry. Who is worrying about over capacity in oil at the present?

I am for the new system of reporting steel production. I say forget about the percent of capacity . . . unless you suggest operating steel at 100 pct of capacity with Uncle Sam buying up the surplus. —Joseph Manuele, Irwin, Pa.

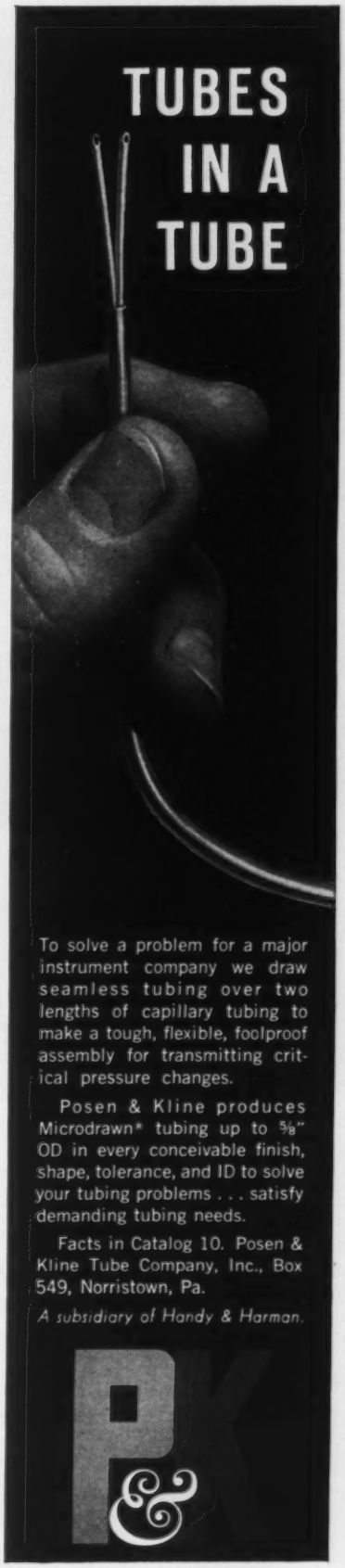

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Figure both to get your final steel cost

Steel is low in cost. You can keep it that way if you don't tack on unnecessary expense. After you've figured initial price don't overlook what it costs to own, store, handle and cut steel for your use. These costs of possession often are hidden. But your steel service center frequently can help you reduce them.

Each steel user's case is different. Ask your steel service center to help you determine the most economical way to buy steel. They will help you figure all your costs of possession, such as:

Cost of capital	Cost of operation	Other costs
Inventory	Space	Obsolescence
Space	Material handling	Insurance
Equipment	Cutting & burning	Taxes
	Scrap & wastage	Accounting

Call your nearby steel service center, or write for free booklet, "What's Your Real Cost of Possession for Steel?"

STEEL SERVICE CENTER INSTITUTE

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STEEL SERVICE CENTER INSTITUTE
540-A Terminal Tower, Cleveland 13, Ohio

Steel

Depreciation Reform

One of the strong points of IRON AGE coverage, we like to think, is its fast and thorough reporting of national events which have a direct bearing on metalworking.

This week's cover article on the results of the Treasury Department's survey of depreciation practices is no exception. Depreciation is of prime importance to all industry. But few industries have as great a stake in depreciation reform as metalworking.

Exclusive Interview — So, by keeping close watch on its progress, The IRON AGE was able to come up with one of the first interpretive reports on the survey.

Not only that, but on p. 31, is an exclusive IRON AGE interview with one of the men in the best position to interpret it, Under Secretary of the Treasury, Fred C. Scribner, Jr.

The Treasury's depreciation survey won't gather dust in the Department's files. It will form the basis for Treasury tax proposals. Tax-writing committees of the House and Senate will find it a "must" in boning up on tax-legislation homework.

Vital Issue—Depreciation reform is also a "must" for a growing America. The modernization of America's industrial plant, or the lack of it, is a key factor in our foreign trade struggles and our efforts to move the domestic economy ahead. For defense purposes, too, there's no substitute for industrial strength.

Yet, in his speech as outgoing president of the National Machine Tool Builders' Association Alan C. Mattison pointed out that more than 62 pct of all machine tools in U. S. plants are over ten years old.

European Contrast — Contrast this with the many new plants in Western European countries and you get some idea of the production battle facing American industry. Faster depreciation rates have played no small part in this industrial buildup.

For years the stock in tirade of those opposing depreciation reform here has been that it is only of help to business. But now it's beginning to dawn on many that a strong, competitive industrial plant helps all the people.

Staple Diet

Cows, like humans, need some "iron" in their systems. But not when it consists of metallic iron or steel in the form of nails, staples, or baling wire.

When this happens, as it does when cows are feeding, the result is "hardware disease" — which can cause illness or death to valuable livestock. Metal taken in with feed will irritate the cow's stomach lining, can cause punctures.

Attraction Aids — The solution, surprisingly enough, is more metal. Only this time it's a nickel alloy magnet inserted in the cow's stomach. These "Magnetrol" magnets (made of International Nickel Co.'s Alnico nickel-aluminum-cobalt-iron alloy) were developed by Louis P. Longo, a dairy farmer of Glastonbury, Conn. They are manufactured by J. T. Slocomb Co. in Glastonbury and marketed by Mr. Longo.

Magnetic Dustbin—As described in Inco Nickel Topics, the metal collector works this way: The magnet is inserted in the cow's second stomach with a plunger device. It has an I-beam-shaped section for maximum iron-holding. This shape also prevents rolling in the stomach. As the cow feeds, the magnet attracts the stray bits of metal coming in. In one test with "forced feeding" this amounted to 2¼ lb of assorted hardware.

WHEN YOU NEED HELP IN A HURRY—

Koppers coupling service cuts costly down-time

Not every coupling service need is an emergency. But it's the emergencies that really test a good organization. That's why Koppers maintains experienced field engineers and outstanding stock facilities throughout the country. In addition, if it's a Fast's Coupling you're replacing, we have a serial number and specific application history for every Fast's for easy reordering. And our modern manufacturing facilities have the extra capacity to lick an emergency for special requirements.

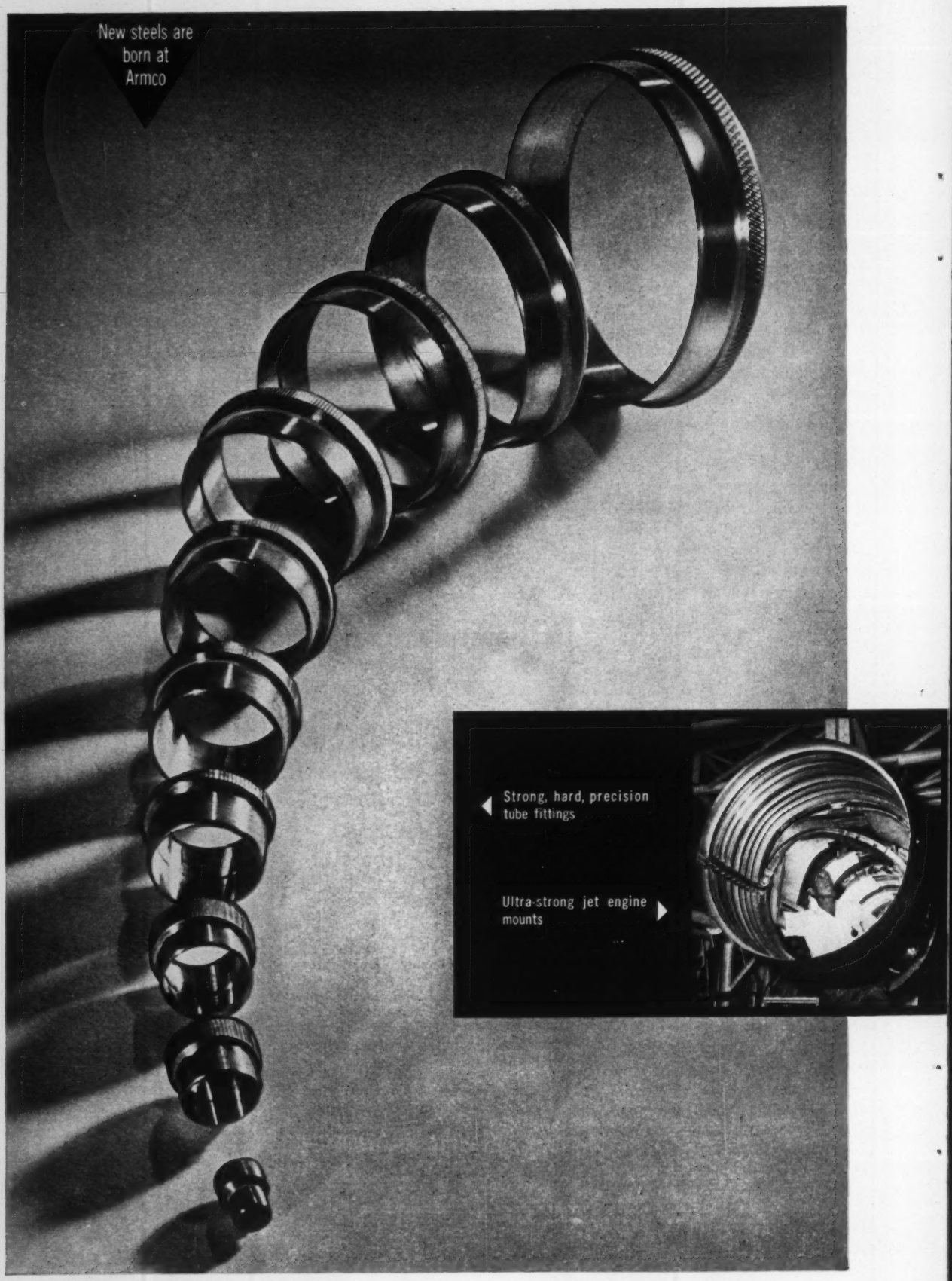
Example: A modern windowless bank in Georgia was able to open for business as usual only because Koppers flew in a completed replacement coupling for its air conditioning unit. Elapsed time . . . request phoned to Baltimore after 10 in the evening . . . coupling arrived before 7:30 next morning.

KOPPERS COMPANY, INC., 201 Scott St., Baltimore 3, Md.

KOPPERS

FAST'S COUPLINGS

Engineered Products Sold with Service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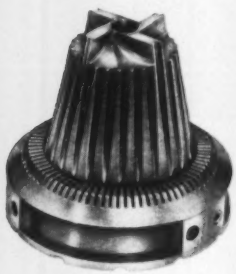
Use Armco 17-4 PH to give shafts, valves, fasteners and other critical parts this outstanding combination of properties:

High strengths. Up to 200,000 psi ultimate tensile strength; 180,000 psi yield strength. Good impact strength over a wide range of temperatures. High endurance limit and fatigue strength. **Corrosion resistance** comparable to Type 304 in many media. **High hardness** to solve wear, abrasion and corrosion-erosion problems. Good resistance to galling and seizing. Excellent mechanical properties to 900 F. Resistance to stress-corrosion cracking. **Cost-saving fabrication.** Short-time, low-temperature heat treatment permits finish-fabrication *first*. No distortion, no scaling, no cracking in hardening. Machinable 17-4 PH can also be upset, forged, swaged and welded.

Get full data

Complete data on 17-4 PH properties and fabrication will show where this unique special stainless may pay off for *you*. Call your nearest Armco Sales Office, your Armco Stainless Distributor, or fill in and mail the coupon.



Corrosion and wear-resisting homogenizer rotor

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This symbol on your products tells customers you use modern, long-lasting stainless steel.

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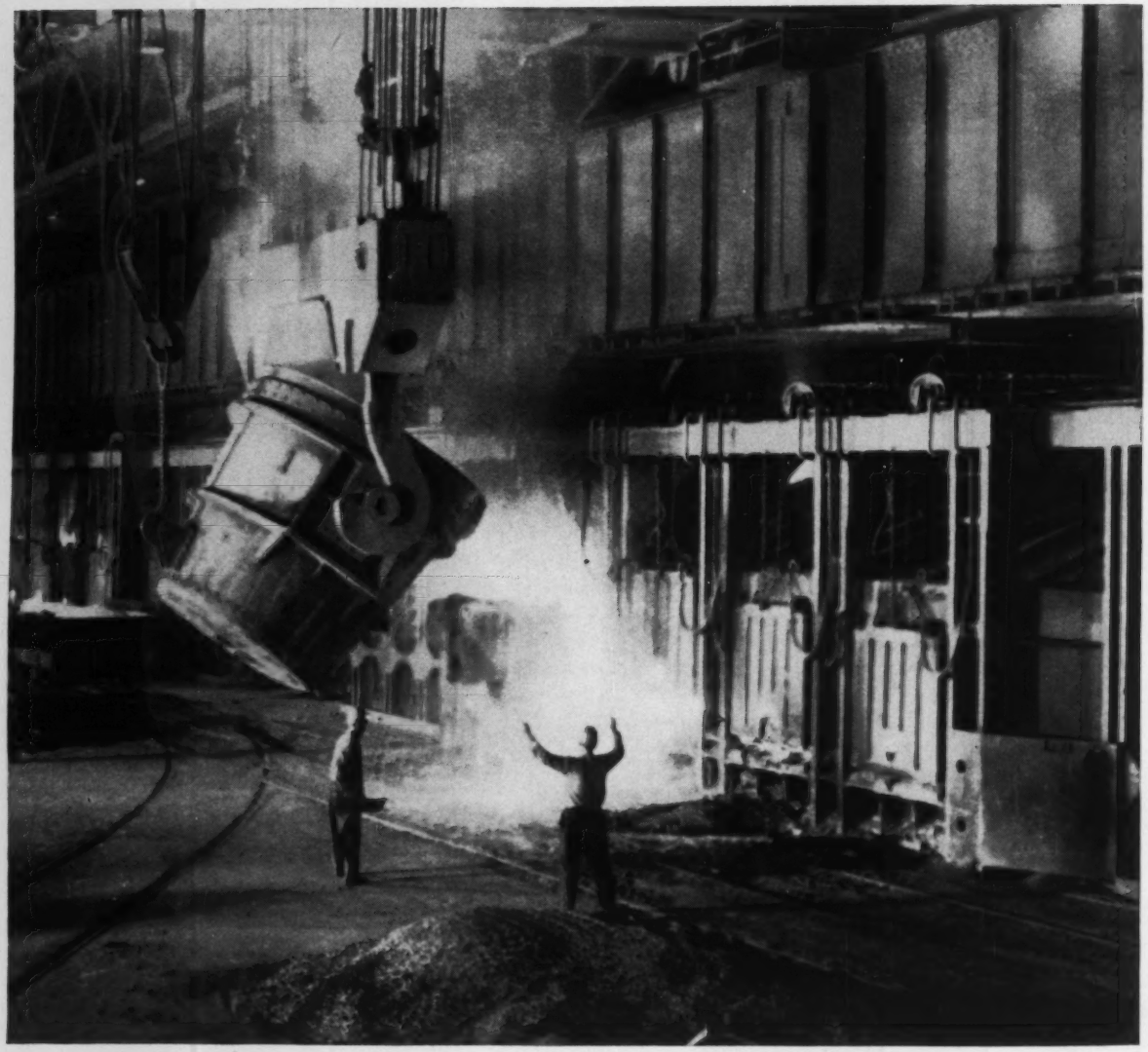


What in blazes can't B.F. Goodrich hose stand

How an improved kind of hose keeps furnace doors from melting

IT'S 3000 degrees hot inside those open hearth furnaces. So hot that the heavy steel doors would melt in minutes except for the hose that carries a stream of cooling water in and out of them.

Trouble was that the hose used to burn out after only 2 or 3 weeks. White hot blasts of heat cook it. Hot metal spatters it. Often big "charging machines" bang into it.

The B.F.Goodrich distributor, servicing the steel mill, asked what we could do to solve this problem. BFG engineers designed, tested, rejected—finally developed a rubber hose, wrapped with asbestos for heat resistance, armored with braided stainless steel wire for strength.

Where other more expensive hose burned out in a matter of a few weeks, the B.F.Goodrich hose is good for *3 or 4 months* of constant use. What's more, the improved BFG hose is much lighter, more flexible, easier for workmen to handle. One man can install it where two were needed for other hose.

B.F.Goodrich makes hose to carry almost anything—from blasts of air to torrents of water; for scalding steam, corrosive chemicals, abrasive sand. Any one of our BFG distributors can explain the different types of hose we make, tell you what to expect from each, help you decide which is your best buy. *B.F.Goodrich Industrial Products Co., Dept. M-953, Akron 18, Ohio.*

B.F.Goodrich

COMING EXHIBITS

Plant Maintenance & Engineering Show — Jan. 23-26, International Amphitheatre, Chicago. (Clapp & Poliak, Inc., 341 Madison Ave., New York 17.)

International Heating & Air-Conditioning Show—Feb. 13-16, International Amphitheatre, Chicago. (International Exposition Co., 480 Lexington Ave., New York 17.)

MHI Pacific Coast Show—Feb. 22-24, Cow Palace, San Francisco. (Material Handling Institute, Inc., One Gateway Center, Pittsburgh 22.)

Western Metal Show—March 20-24, Pan Pacific Auditorium, Los Angeles. (American Society for Metals, Metals Park, Novelty, O.)

Welding Show—April 18-20, New York Coliseum, New York. (American Welding Society, 33 West 39th St., New York 18.)

MEETINGS

JANUARY

Aluminum Window Mfrs. Assn.—Annual meeting, Jan. 9-12, Emerald Beach Hotel, Nassau, Bahamas. Association headquarters, 630 Third Ave., New York.

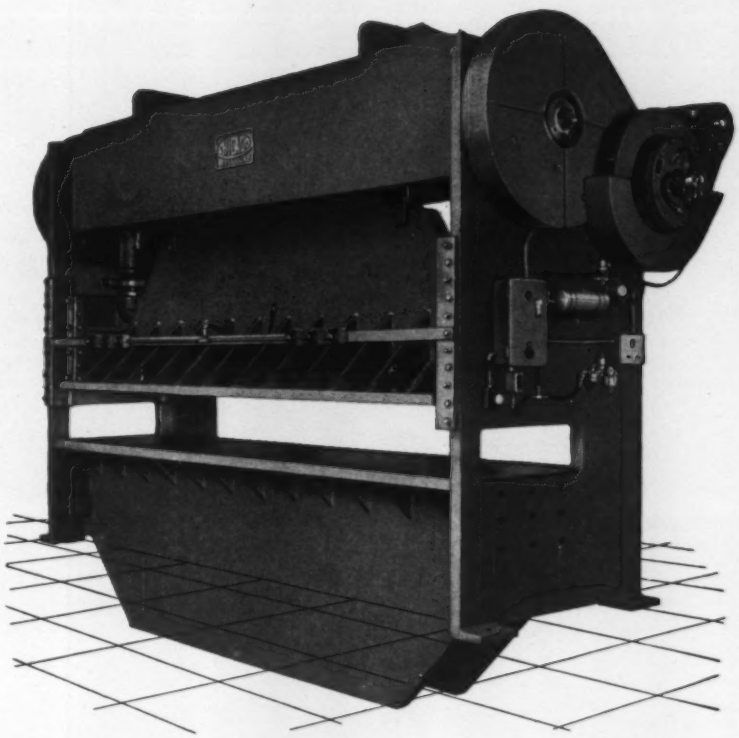
Society of Automotive Engineers, Inc.—Annual meeting, Jan. 9-13, Cobo Hall and Convention Arena, Detroit. Society headquarters, 485 Lexington Ave., New York, N. Y.

Hoist Manufacturers Assn., Inc.—Annual meeting, Jan. 10, Statler Hotel, Cleveland, Association headquarters, One Thomas Circle, Washington.

Steel Shipping Container Institute, Inc.—Winter meeting, Jan. 17-18, St. Regis Hotel, New York. Institute headquarters, 600 Fifth Ave., New York.

Steel Plate Fabricators Assn.—Annual meeting, Jan. 18-20, Logo

(Continued on P. 25)



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PRESSES

STRAIGHT-SIDE TYPE

large die area

capacities up to 400 tons

This is a typical model of CHICAGO straight-side-type presses used for multiple punching, notching, and trimming operations. This press with a die area of 48 inches by 198 inches has a capacity of 200 tons.

Complete recommendations for any job on request.

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Hand and Power Bending Brakes • Special Metal-Forming Machines

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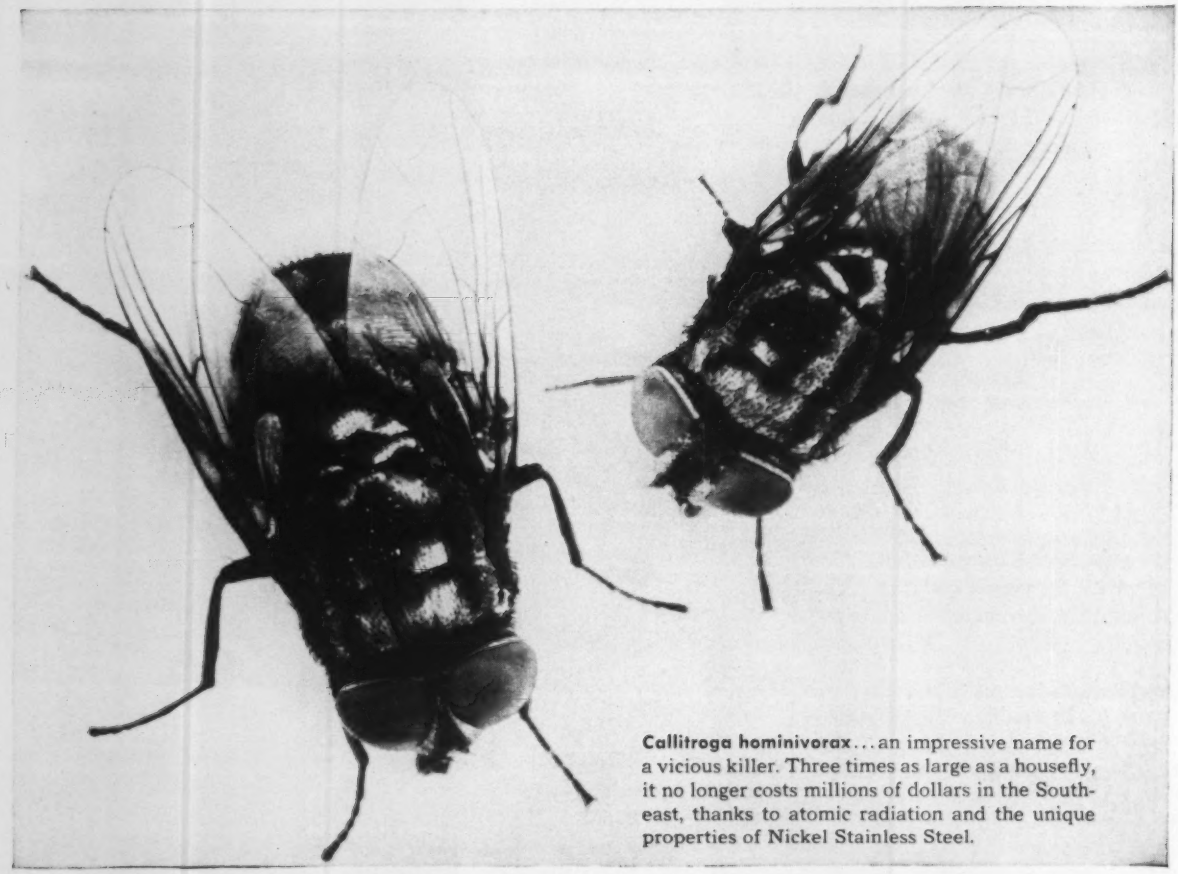


Callitroga hominivorax... an impressive name for a vicious killer. Three times as large as a housefly, it no longer costs millions of dollars in the Southeast, thanks to atomic radiation and the unique properties of Nickel Stainless Steel.

Atoms clobber a $20-million-a-year pest

How Nickel Stainless Steel helped fight costly cattle menace

A few small flies can kill a full-grown steer in ten days.

They call this killer *Callitroga hominivorax*, or screwworm fly. It used to cost Southeast cattlemen 20 million dollars a year.

Thanks to a peaceful use of atomic energy, the U.S. Department of Agriculture reports that *Callitroga hominivorax* was completely eradicated within seventeen months. This achievement may mark a new precedent in modern methods of pest elimination. Over two billion laboratory-raised male flies were sterilized by atomic radiation and then released. Because the females then laid sterile eggs, the screwworm fly population was destroyed.

Sterilization was accomplished by exposing males to gamma radiation from Cobalt 60 within a lead-shielded cask of Nickel Stainless Steel.

Nickel Stainless Steel was chosen by the designers, Knapp Mills Inc., for several reasons. It gives strength and rigidity to the cask's interior for greater handling safety. It stands up to the nitric acid solution used for radioactive decontamination – a cleaning process that plays havoc with less corrosion-resisting metals. And its sanitary, attractive appearance adds sales appeal to any product.

Are you in the atomic energy field ... or any field where you need a metal with a combination of superior properties? Consider the advantages of Nickel or one of its alloys when planning the construction of your equipment. Help with any metals problem is available from Inco. Just call or write us.

THE INTERNATIONAL NICKEL COMPANY, INC.

67 Wall Street INCO New York 5, N. Y.

The Irradiator, nemesis of screwworm flies, is fabricated of Nicrolum*—a Nickel Stainless Steel to which lead has been metallurgically bonded. Six of these machines brought the fly menace under control.

*T.M. of the designer-manufacturer, Knapp Mills, Inc., Long Island City, N. Y.

INCO NICKEL

NICKEL MAKES ALLOYS PERFORM BETTER LONGER

MEETINGS

(Continued from P. 23)

Mar Hotel, Fort Lauderdale, Fla. Association headquarters, 105 W. Madison St., Chicago.

Industrial Heating Equipment Assn., Inc.—Annual winter meeting, Jan. 23-24, Dearborn, Mich. Association headquarters, 2000 K St., N. W., Washington, D. C.

Instrument Society of America—Annual meeting, Jan. 23-25, Hotel Astor, New York. Society headquarters, 313—6th Ave., Pittsburgh.

Society of Plastic Engineers, Inc.—Annual technical meeting, Jan. 24-27, Shoreham & Park Sheraton, Washington, D. C. Society headquarters, 65 Prospect St., Stamford, Conn.

National Tool & Die Manufacturers Assn.—Winter board meeting, Jan. 24-28, Biltmore Hotel, Palm Beach, Fla. Association headquarters, 907 Public Square Bldg., Cleveland.

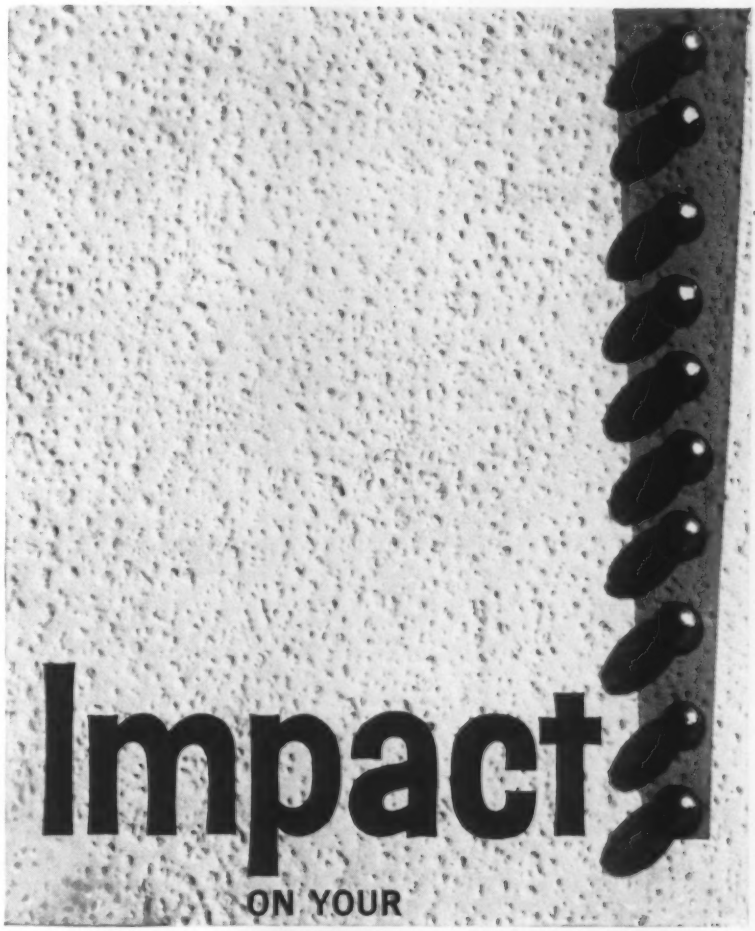
Metal Lath Manufacturers Assn.—Meeting, Jan. 25-26, Pick-Carter Hotel, Cleveland. Association headquarters, Engineers Bldg., Cleveland.

Cutting Tool Manufacturers Assn.—Annual business meeting, Jan. 26, Harmonie Club, Detroit. Association headquarters, 1216 Penobscot Bldg., Detroit.

National Assn. of Secondary Material Industries, Inc.—Midwestern Div. regional meeting, Jan. 26, Statler-Hilton Hotel, Detroit. Association headquarters, 271 Madison Ave., New York.

Truck-Trailer Manufacturers Assn., Inc.—Annual convention, Jan. 29-Feb. 1, Hollywood Beach Hotel, Hollywood, Fla. Association headquarters, 710 Albee Bldg., Washington, D. C.

Steel Kitchen Cabinet Manufacturers Assn.—Midyear meeting, Jan. 31, Sheraton Towers Hotel, Chicago. Association headquarters, 910 Park Bldg., Cleveland.



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Cutler-Hammer cuts costs

In 1951, following mechanical improvements on the hydraulic system powering its plastic molding presses, Cutler-Hammer found that oxidation and emulsification of a low-grade hydraulic oil resulted in sticking valves, high oil consumption, costly replacement of worn main ram packings. Change to a premium Mobil oil and installation of a centrifuge for water and contamination removal reduced ram packing wear by 75% and resulted in a reduction in valve sticking and oil consumption. After 9 years, with periodic oil analyses by Mobil, the original fluid fill is still in service. Savings: $5,484 in 1959 alone.

Mobil

with Mobil_saves $13,300!

Leading manufacturer of engineered electrical systems benefits from Mobil Correct Lubrication, realizes economies in wide range of operations, saves $13,300 in one year alone

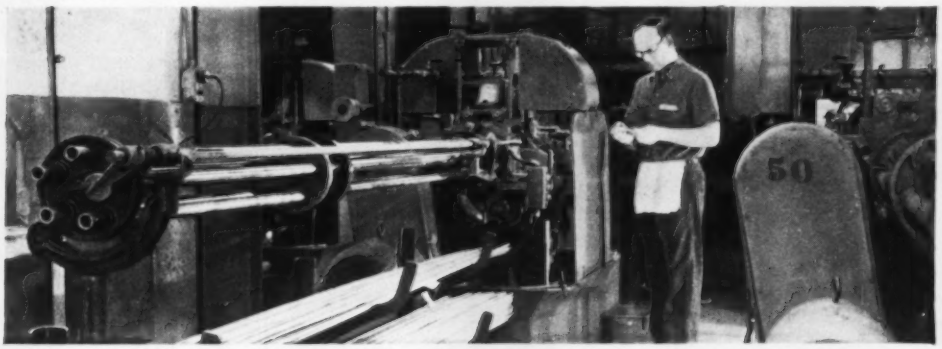
A pioneer in the production of electric controls, Cutler-Hammer, Inc., has for many years relied on a Mobil Program of Correct Lubrication for its several Milwaukee plants. The Mobil Program has consistently brought benefits to Cutler-Hammer—in terms of increased production efficiencies and maintenance dollar savings.

Working in close liaison with Cutler-Hammer technical personnel, Mobil Engineers have made recommendations and suggestions in many areas where lubrication is a factor. These recommendations—a few of which are itemized below—resulted in a saving of $13,300 to Cutler-Hammer in 1959.

Your plant may profit from a Mobil Program too. For further information, call your Mobil Representative. Or write, Mobil Oil Company, 150 East 42nd Street, New York 17, New York.

To guide lubrication personnel in performing required services, Mobil developed complete lubrication charts for machines at Cutler-Hammer, worked out oiler routes and schedules, and recommended use of time-saving lubrication cart. Increased efficiency permitted reassignment of a maintenance man, reduced other overhead, saved $7,452 in 1959—principally in the Press Department.

A Mobil recommendation covering quantity deliveries of oils and greases proved advantageous to Cutler-Hammer. After studying Cutler-Hammer's requirements, Mobil recommended that lubricant purchases be consolidated to permit carload deliveries beginning in 1955. These carload deliveries made possible discount savings which last year amounted to $364.



In Cutler-Hammer's screw machine department, a central cutting oil system serves many machines. Contamination of cutting fluid by lubricating oil frequently reduced machining efficiency to the point where tolerances, tool wear, poor finishes and excessive smoking became serious problems. Mobil Engineers have helped greatly to reduce these problems by periodically analyzing cutting oil characteristics and after each analysis, prescribing corrective action to restore maximum machining efficiency.

Correct Lubrication

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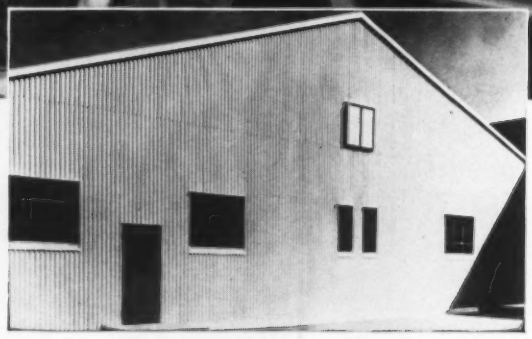
Cutting and slitting operations normally keep this Steelweld Shear busy 16 hours a day. It is equipped with Steelweld's popular Micro-Set Knife Adjustment. This permits adjusting the knife clearance to suit the thickness of metal being cut in the matter of seconds. Thus, the finest cuts are assured for every shearing job.



A recent Pascoe Building.

RAPIDLY forging ahead in the prefabricated steel building field, Pascoe Steel Corporation, Pomona, California, has found its Steelweld Shear to be an extremely important factor in maintaining a steady rate of production. A large amount of shearing is required to fabricate several hundred tons of steel per month.

The Shear is normally operated 16 hours a day. It is used for cutting web plates for building columns, rafters and many other building components. About 20 hours a week it is used for slitting. The machine has functioned with very little maintenance. In nearly three years of service, the clutch has never required adjustment.

For the very latest in shears and brakes, mechanically or hydraulically operated, be sure to see what Steelweld has to offer.

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STAINLESS STEEL MUFFLERS ARE STANDARD EQUIPMENT on one of the luxury cars, according to a late report from Detroit. Each of the car's dual mufflers weighs 13 lb and contains 8 lb of stainless. It's the first use of stainless for mass-produced mufflers, a project steel men have been working on a long time.

AN UPSWING FIRST SPOTTED TWO MONTHS AGO by a big producer of hydraulic equipment, continues. The company reports backlogs are still gaining as demand from a widely-varied customer list continues its upswing. Hydraulic equipment has in the past proved to be a lead indicator on general business upswings.

APPLIANCE MAKERS LOOK TO EUROPE for more original equipment sales. Appliances there have reached only a fraction of the saturation attained in the U.S. Philco Co. marketers credit aggressive selling and designs with strong appeal to Europeans for their success in this market. Philco-sponsored products there have jumped by over 55 pct between 1957 and 1960.

SOME BRIGHT SIGNS IN THE EARTHMOVING EQUIPMENT MARKET in the Midwest are appearing. A few equipment makers have stepped up their purchases of materials and components. One has tentatively drawn up a buying program that is the strongest since March of 1960. Finished goods stocks in general still remain high.

U.S. MOTOR VEHICLE PRODUCTION in 1960 totaled 7,905,002 units, up 17.6 pct from 1959. The year's output included 6,701,279 cars, 1,199,568 trucks and 4155 motor coaches. In 1959, production of 6,723,588 units included 5,599,492 cars, 1,121,404 trucks and 2692 buses.

USE OF ALUMINUM IN MOBILE HOMES will hit a record-breaking 36.5 million lb. in 1961. This is the estimate of Neil Zundel, director of transportation markets for Reynolds Metal Co. He estimates 90 pct of the 120,000 mobile homes likely to be built this year will use aluminum as "the major construction material."

WHEN WILL THE MARKET TURN? Economists are pouring out more statements than reasons for an expected upturn in mid-1961. For the "cyclical-minded" market researcher, one economist reminds that the average decline in a business cycle lasts 20 months. The slump, started in May, could then still run through 1961.

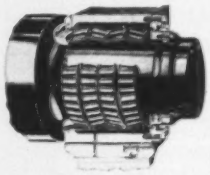
1 YEAR LUBE COST ON 3 REVERE MILLS: $115
with oil mist lubricated Timken® back-up and work roll bearings

You probably spent as much money lubricating your car last year as Revere Copper and Brass Incorporated spent on these three mills together. They used 3 barrels of oil in a year. All three of these aluminum mills are on Timken® tapered roller bearings, with standard tapered bore (TQIT) bearings on the back-up rolls. And furthermore, operators of the two rolling mills in the Revere plant at Chicago report that after three years of operation, the original grinding marks were still clearly visible in the load zones of the back-up roll bearings indicating no measurable wear.

In addition to the lubrication economies of oil mist systems on Timken bearing-equipped mills, Revere's experience proves that the "Balanced Proportion" design of Timken bearings, increases roll neck strength, increases mill rigidity and keeps the aluminum being rolled on gage.

Because Timken bearings lend themselves to oil mist lubrication, operators realize another big advantage. No seal leakage is experienced, thereby eliminating staining of rolled product and contamination of rolling solution.

If you're buying or building a rolling mill, be sure to get the latest information on roll neck and screw down bearings from the Timken Company. Our graduate engineer salesmen will work with you to help you get the most bearing capacity, the most bearing life for your bearing dollar. The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

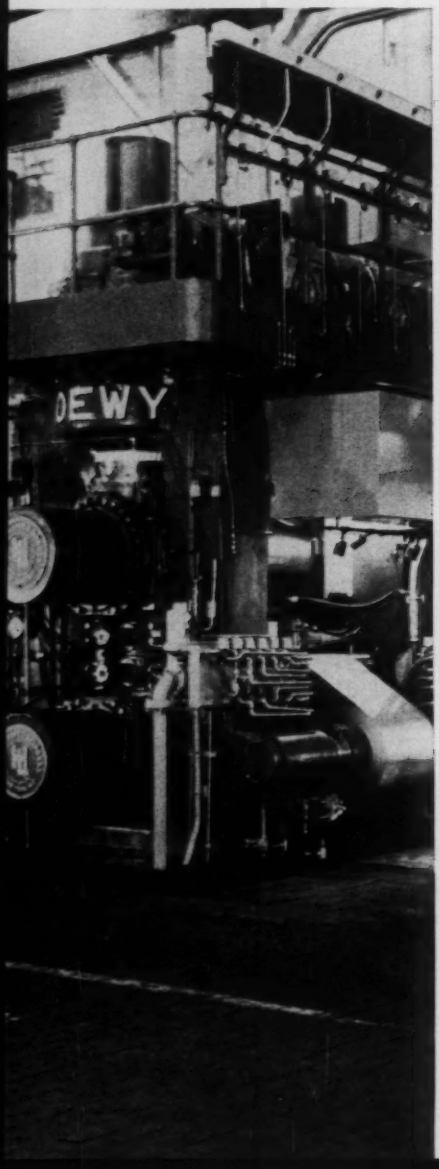


Industry rolls on

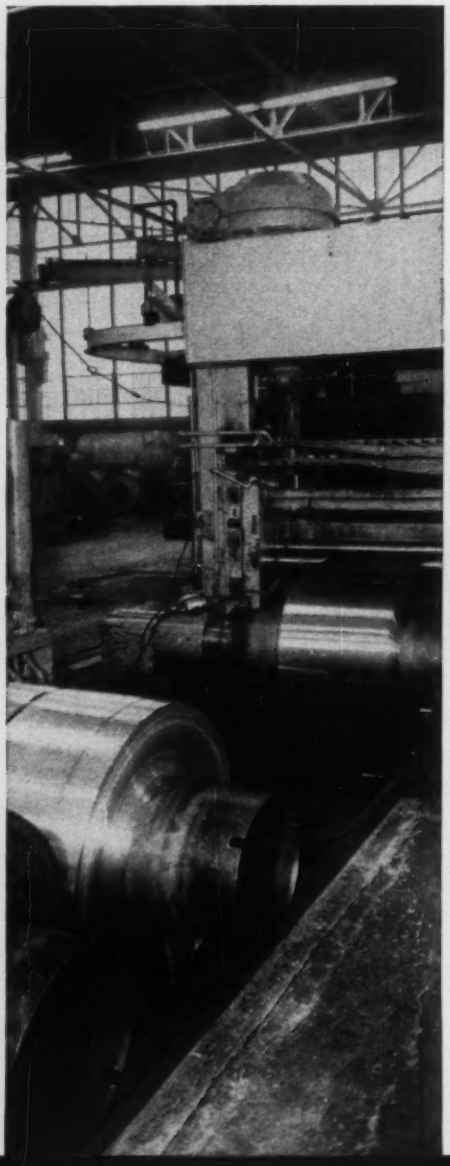
TIMKEN®

tapered roller bearings

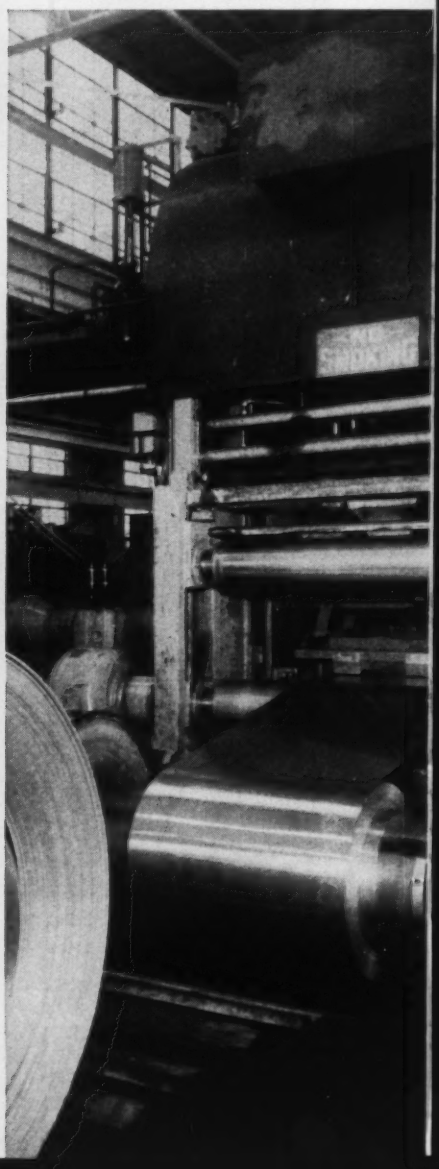
9½" AND 33" x 44" COLD FINISH MILL



12" AND 35" x 62" ALUMINUM FINISH MILL



18" AND 45" x 62" ALUMINUM RUNDOWN MILL



How Business Reacts to Treasury Depreciation Survey

Most companies responding to the Treasury Department's depreciation survey favor some form of revision.

Here is a rundown of what they want, along with comments by Undersecretary Fred C. Scribner, Jr.

By E. C. Beaudet

■ Much of the guesswork now has been taken out of the methods by which business writes off plants and equipment for tax purposes.

A Treasury Department survey pins down statistically the depreciation practices of some 3000 large and small businesses throughout the country.

While it holds few surprises, the survey puts future considerations for depreciation reform on a more factual basis. Among other factors, the lack of concrete data has long been a stumbling block to changes in the tax laws governing depreciation.

"It was very clear to the Treasury Department that this survey was needed," Under Secretary Fred C. Scribner, Jr. told The IRON AGE.

Early Results—Mr. Scribner says that preliminary survey results show the need for changes in present depreciation methods and demand the attention of tax-writing committees of Congress.

"Heretofore," he reports, "Congress couldn't offer relief from present depreciation legislation blindly."

The survey, underway since last July, provides two separate kinds of information.

Opinion First — One gives the opinion of businessmen about current depreciation practices and the changes they want in the tax laws. The other provides quantitative data on service life and depreciation methods for different industries.

The latter, not included in the preliminary report, provides a sounder base for determining the overall benefits gained from different depreciation changes and their effect on federal revenues. This tabulation is now nearing completion and may be released in the next few months.

Meanwhile, much can be gained from a look at how industry feels about present depreciation laws.

Good Response—Answers came from 71 pct of the 2701 corporations receiving the Treasury Department survey. This group accounts for over half the depreciable property owned by taxpaying corporations.

A correspondingly high number

UNDERSECRETARY SCRIBNER: "What we need in the economy is more people willing to invest in new plants and equipment . . . ."

of replies came from smaller businesses. Of this group, 1177 out of 7593 questionnaires were returned in time for the preliminary report. To obtain a higher degree of cooperation, smaller businesses were surveyed by the Small Business Administration.

While he says one can't draw general conclusions from the preliminary report, Mr. Scribner believes the final tabulations will provide the Treasury Department with a factual basis upon which to make reasoned judgment about:

1. Whether industry does need relief from present depreciation regulations.

2. Whether liberalized depreciation would stimulate more plant investment.

3. What the cost might be in terms of federal revenues.

What Industry Wants — Meanwhile, the preliminary survey results pretty well outline industry's preferences for different kinds of depreciation reform.

About 89 pct of the larger and 85 pct of the smaller businesses did express a desire for changes in present depreciation regulations.

Freedom to set useful lives and choose depreciation methods, as long as they were applied consistently, was the approach most favored by large and smaller businesses. About 50 pct of both groups put this method at the top of the list.

Need Flexibility — Treasury tax experts, however, point out that this does not mean necessarily that business wants to write off plants and equipment within a year or some other relatively-short period. This would cut too heavily into profits in the early stages and boost tax payments later.

Rather, they say, it reflects a desire on industry's part to be more flexible in the application of more conventional methods as they apply to particular company situations.

The next most popular method for revising depreciation laws called for some form of depreciation adjustment to reflect increased price levels.

Second Choice—Some 29 pct of the larger businesses and 22 pct of the smaller ones asked for price-level adjustments as their first choice.

Regardless of the order of choice, 75 pct of the larger companies asked for annual price level adjustments. About a fifth of the group preferred some form of reinvestment depreciation allowance.

Bracket System — Of the nine liberalized depreciation methods suggested, the bracket or Canadian system came in third as the first choice of both large and small businesses.

This method calls for the grouping of all depreciable assets into broad-class categories with generally shorter lives.

Eight percent of the large corporations gave this first choice and 17 pct listed it second. Smaller business put it at 13 and 14 pct respectively.

The list of depreciation methods suggested, and the first and second choices of large and small business, are shown in the table on p. 33.

Selective Reform—Mr. Scribner feels there may be strong arguments for a selective program of accelerated depreciation for certain growth industries.

He points out, however, that these programs would vary industry by industry and would be difficult to apply equitably and without fa-

How Business Reacts to Liberalized Depreciation:

Tax vs. Book Reporting

Question: If depreciation were liberalized along the lines you favor, would you be willing to generally conform book and tax depreciation accounting practices?

Larger Businesses	Smaller Businesses
Yes—86 Pct	Yes—97 Pct
No —14 Pct	No — 3 Pct

Capital Gain Benefits

Question: Would you be willing to forego capital gains benefits on disposals of depreciable property to the extent of depreciation previously taken?

Larger Businesses	Smaller Businesses
Yes—73 Pct	Yes—63 Pct
No —27 Pct	No —37 Pct

Investment Decisions

Question: Would liberalized depreciation materially influence your investment decisions so as to increase your capital expenditures?

Larger Businesses	Smaller Businesses
Yes—65 Pct	Yes—59 Pct
No —35 Pct	No —41 Pct

voring one industry over another.

One question which has long troubled Treasury officials, congressmen and industry leaders seeking reform, is the extent to which business has taken advantage of liberalized depreciation methods already authorized under the 1954 Internal Revenue Code.

Partial Answers—The question is partly answered in the preliminary report. Of the larger companies, 70 pct have used the new methods. Of these, two-thirds indicated they were using the double-declining balance method. More than one half reported using the sum-of-the-years-digits method.

Smaller companies, too, claim similar actions. Fifty-seven percent say they use one or more of the methods.

Another liberalized method, authorized in 1958, permits a 20 pct first-year write off of capital investment in new and used equipment. About 22 pct of the larger companies and 37 pct of the smaller businesses chose to take advantage of this tax benefit.

Want Relief—Despite this, about 63 pct of the larger corporations and 47 pct of the smaller companies feel that present depreciation allowances are unsatisfactory.

Those companies, both large and small, which say they are satisfied with the present depreciation regulations are a matter of concern to those who favor liberalization ot present depreciation regulations.

It is pointed out, however, that many of them may include those whose assets do not turn over readily and to whom depreciation revision is not of major importance. The extent of this will be turned up in the industry-by-industry tabulations in the final report.

Capital Gains—Mr. Scribner, in commenting on the report, says that most companies are willing to give up the 25 pct tax rate on income from the sale of depreciable property in exchange for faster depreciation schedules.

"This is essential to any revision of present depreciation regulations," he says.

Further, he estimates that a 10 pct increase in depreciation rates, if such were to take place, would result in an initial loss of federal revenues of about $1 to 1.5 billion.

"The less money the government has to spend, the more it must increase its outstanding debt in the same year or increase taxes. There are not enough areas from which to draw more tax revenues," he claims.

Stimulate Growth — Aside from this, however, the Undersecretary says, "If there is any one method for stimulating the economy, this (faster depreciation) is it."

Other methods for stimulating the economy, he says, are not going to help much unless they revitalize the whole economy. "What we need," he contends, "is more people to invest in new plants and equipment and consequently increase the country's gross national product."

What Methods Business Favors

Percentage of responses	Large corporations		Small businesses	
Depreciation methods	**1st**	**2nd**	**1st**	**2nd**
A. All depreciable assets grouped into broad-class categories with generally shorter minimum lives prescribed by statute.	8 Pct	17 Pct	13 Pct	14 Pct
B. Further acceleration during early part of life of asset, such as triple-declining balance.	4	13	7	11
C. Some form of depreciation adjustment to reflect increased price levels.	29	25	22	22
D. Further extension of additional first-year depreciation allowance.	*	3	4	10
E. Freedom to follow own judgment as to lives and methods, consistently applied.	51	25	50	23
F. Issue a revised Bulletin "F", for continued use as a guide only.	2	8	2	9
G. Legislation authorizing a detailed classification of assets along lines of Bulletin "F", to be prescribed for general use subject to a statutory percentage leeway as to useful lives or depreciation rates.	1	4	1	5
H. A selective program of accelerated depreciation for particular industries or lines of business which may demonstate a need for encouragement in the national interest.	2	3	*	4
I. Other.	3	2	1	2
	100 Pct	100 Pct	100 Pct	100 Pct

Treasury Dept., Tax Analysis Staff. *Less than 1%.

Source: Preliminary tabulation from Treasury Department Depreciation Survey Questionnaire.

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Aluminum Aims At Auto Market

Alcoa says the average 1961 car has 62.8 lb of aluminum, up 15 pct from last year.

And it says three new trim and bumper alloys will help double per-car use by 1965.

■ How rapidly is aluminum coming up as a major automotive material? The record shows this year marks the eighth consecutive year in which automotive aluminum applications set an all-time high.

The average new car uses 62.8 lb of aluminum. This is a record increase of 15 pct over the 54.4 lb used in the average 1960 car. Included in this year's total is a record 10.8 lb for trim applications. These are some of the findings of Aluminum Company of America's sixth annual survey of aluminum uses in passenger cars. The results were announced in Detroit this week.

"Aluminum Snowball" — In releasing the survey, R. B. McKee, Alcoa's vice president in charge of sales, said, "With these impressive records to report, I hope to look back on 1961 as the year the 'aluminum snowball' really began rolling."

To give the "snowball" a little extra push, Alcoa used the occasion to announce three new trim alloys which "are expected to hasten acceptance of aluminum bumpers."

The new trim and bumper metals consist of two sheet alloys, 5757 and M648, and an extrusion alloy, 6563.

For Bumper Use—Alcoa claims alloy 5757, a member of the aluminum-magnesium series, is the brightest trim alloy available. And it says a major auto company has already specified it for all brightwork on its 1962 models.

The other two alloys combine high strength and formability with good finishing characteristics.

George E. Herrman, Alcoa's manager of transportation sales, says this combination of qualities makes them "particularly applicable for bumper use."

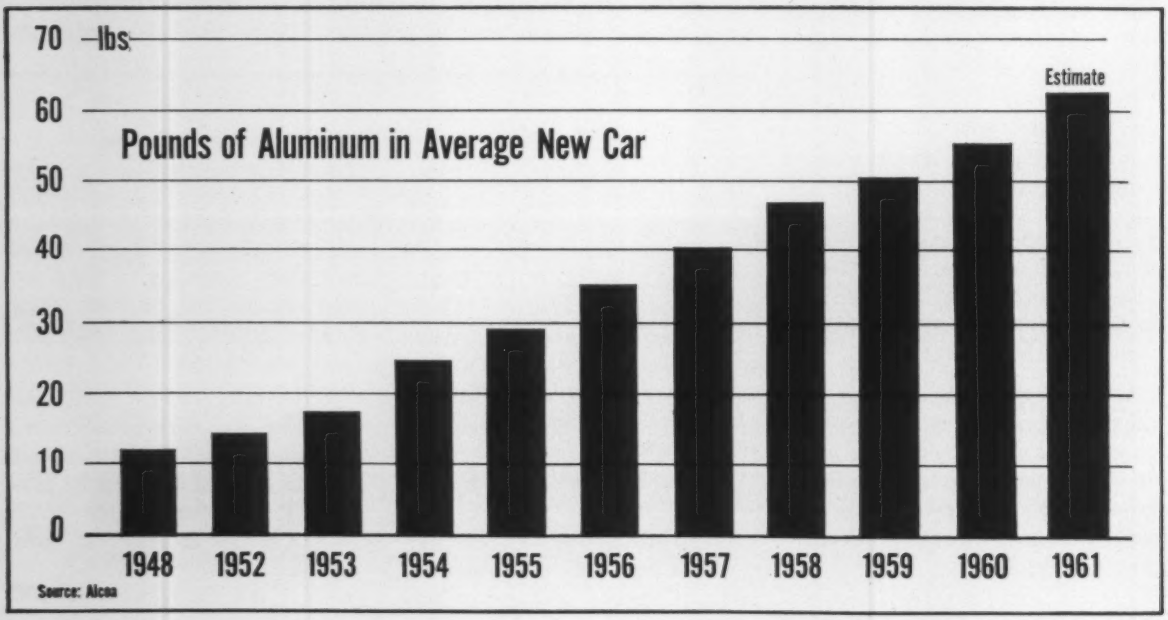
Importance of Alloys—He says alloy 6563 can be anodized to the brightest finish possible on an aluminum extrusion alloy. Alloy M648 has "the same high strength and good finish qualities as its extrusion counterpart." It is now available in experimental quantities in sheet form.

Mr. Herrman says the "package of trim and bumper alloys will implement the additional use of aluminum brightwork."

Just how important the new alloys are to Alcoa in its drive to boost automotive uses? Some idea can be gathered from Mr. McKee's predictions on how much aluminum cars of the future will have. He predicts the next five years will bring aluminum bumpers, wheels, radiators, and rear-axle housings on mass-produced cars.

Double in 5 Yrs—"By 1965," he says, "the average car will re-

U.S. Automobiles Use More and More Aluminum



quire at least 115 lb of aluminum, about double today's usage. And by 1970, 300 lb per car would not be extraordinary.

"The aluminum industry's present and future expansion programs will keep pace with this increasing demand," he said.

It would appear that the industry stands a good chance of reaching the 1970 goal. Oldsmobile's new compact, the F-85, already utilizes an average 159 lb of aluminum. And the Buick Special uses an average of 137 lb. Both cars are powered by an aluminum V-8 engine.

Leading Users—Aluminum use in automobiles has climbed an average of 5.5 lb per car per year during the past seven years.

In 1956, the first year for Alcoa's detailed studies, average use was 35.2 lb. The next year it rose to 40.5 lb, then to 47.3 lb in 1958, 50.7 lb in 1959, and 54.4 lb for last year.

Chrysler Corp. leads the industry with an average per-car use of 76 lb. General Motors Corp. vehicles average 67 lb this year, a 32 pct increase over last year. This is due largely to the introduction of its new compacts.

Uncounted Pounds—The average for Ford Motor Co.'s cars is 53 lb, up 8.9 pct from 48.7 lb last year. American Motors boosted its average use to 59.1 lb compared with 48.9 in 1960, largely due to a new aluminum engine. And Studebaker-Packard Corp.'s Larks have an average 21.1 lb, up 18.4 pct from the 1960 average of 17.9 lb.

Alcoa's figures pertain to finished part weights. They don't include scrap generated in the fabricating process.

And Mr. McKee points out another 8 or 9 lb of aluminum can be added to the per-car average for uses not included in the survey. This would be for spare parts, alloying other metals, deoxidizing steel, muffler coatings, and paint additives for metallic finishes.

Depressed Area Aid Set for Fast Action

More industrial plants, public works projects and fast tax write-offs are planned to aid stricken areas.

One bill being pushed in the Congress means $390 million in aid for these areas.

By R. W. Crosby

■ The construction and expansion of industrial plants is the basic action which will come from government aid to economically depressed areas of the U. S.

One of the prime parts of the aid program pushed by Congress and the next White House Administration is a provision for more than $300 million in low-interest loans to chronic labor surplus areas to attract new industries or expand existing industries.

Broad Aid — Other major sections of the program—special public works projects, tax write-offs, more defense money for the areas—are geared toward industry buildup.

These plans have been given top priority by Congress and President-elect John F. Kennedy. Immediate action from both sources is a sure thing.

Already Congress has begun to move the $390 million aid bill sponsored by Sen. Paul A. Douglas, D., Ill., through the legislative mill. Heavy odds favor passage and enactment.

Package Program—The Douglas bill, which has a twin in the House, goes hand in hand with a report the Illinois Senator, and a panel under his direction, made for Kennedy. The report and the bill are a package program.

To further encourage industry to locate in persistent labor surplus areas, consideration is being given to a special tax amortization. This would provide for accelerated write-offs of plant and equipment for location or expansion of plants in such areas.

The program also calls for the channeling of government contracts into depressed areas. Sen. Douglas' report recommends that the President direct procurement agencies to require prime contract bidders to make the maximum use of manpower and facilities in labor surplus areas.

Public Works—A special public works program would be undertaken as an anti-recession measure. A portion of funds for this would be set aside for distressed areas for work on such things as local roads.

Labor surplus areas would be given preferred consideration in choice of sites for defense production plants and defense-related installations.

The program, if carried out completely, would see action in these areas, too:

Action Areas — Development of natural resources of depressed areas.

—Special consideration for depressed areas in the federal highway program.

—Development of a minerals research program to find ways to economically extract and process certain low quality ores, or to find new uses for minerals in depressed areas.

—Make a supplemental appropriation for other public works projects.

The incoming Administration and a large part of Congress are committed to support of the program. Consequently, it has a high priority and will be speeded through the legislative process.

"Use With Caution" is Advice In Using Inventory Figures

A great deal of business analysis centers around inventory figures. But a top Commerce Dept. official warns they can mislead badly.

The most widely-used figures are tied to seven-year-old bench-mark. Only book values are used.

By J. D. Baxter

■ "How are inventories?" is a business byword these days.

A number of economists have termed the present business trough an "inventory recession." This concern has put inventory statistics in the spotlight.

Marketers scan inventory figures for "bottoms" that might trigger new orders. Inventory control men compare their own stock situations with industry figures. And top brass check inventory figures for signs of a turn in the business weather.

Chief Source—Most thoroughly referred to, however, are the Dept. of Commerce's monthly inventory figures.

How good are these figures? Are they complete? Accurate? What are the limitations in using them? How can they be used most effectively?

To get the answers to these questions, The IRON AGE went to the man who knows the most about these figures. He is Lawrence Bridge, chief of the business structures section of the Commerce Dept's. Office of Business Economics.

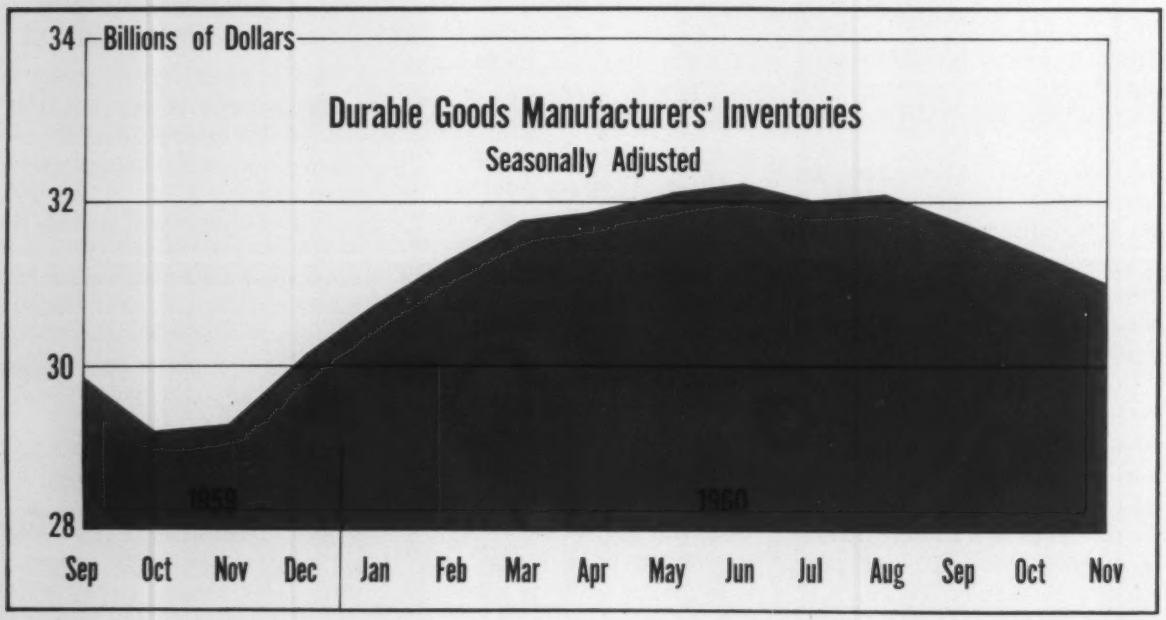
Here are a few surprising things Mr. Bridge will tell you about the inventory figures issued by his office:

Weaknesses — The statistical "benchmark" used is seven years old. It is the 1954 business income tax returns. While the department has been trying to update this benchmark by using the latest year Census of Manufacturers, it has not yet been successful in doing so.

Inventory data for any company is listed only by main product of that company. For example, all stocks reported by General Motors Corp. are listed under "motor vehicles." Actually, of course, GM's inventory also includes materials used in their appliance division, locomotive plants, and electronics, for example.

No one standard procedure is used in reporting inventories. In one recent case, an electric machinery maker changed its method of reporting subsidiary company

Slide Marks Durable Goods Inventories



stocks. The government-issued figures were affected to the tune of $100 million in one fell swoop.

Commerce Dept. survey figures are based on responses from some 5000-6000 companies. But the all-important figures on inventories by stages of fabrication are based on responses from relatively very few companies.

There are other aspects that must be understood about the government's inventory data if it is to be used with intelligence.

Data Collection—From the most complete data on inventories available, corporate income tax returns, the Commerce Dept. selects 5000-6000 companies from which to solicit monthly inventory status reports. These companies are selected to be a representative cross section of U. S. industry by size, type, location and so on.

The actual inventories of reporting companies represent anywhere from 5 to 90 pct of each industry's total inventories. In the case of industries where production is concentrated in a relatively few companies, these reported figures represent 90 to 100 pct of all the industry stocks. This is true in steel and automaking. For all metalworking industries, about 50 pct of total inventory amounts are actually reported by surveyed companies.

The particular tax returns used in compiling the list of companies reporting inventories are for the year 1954. The Commerce Dept. could not afford to change this benchmark year annually. The statistical problem involved would be too costly in time and money. Instead, the department "projects" the 1954 figures into current coin through statistical "stretching."

Business Changes—The structural changes in companies and industries made in the past seven years have been radical ones. This has affected the accuracy of inventory data. For example, in the Commerce Dept. surveys, all inventories are listed according to the main product of any given manufacturer. Since 1954, technological advances and mergers, to name two leading forces, have caused many changes in main product listings. These changes and their effect on inventories are not always picked up in Commerce Dept. figures.

In fact, the department has long tried to change from the 1954 Internal Revenue Service figures and use the Census of Manufacturers. Again, time and money stand in the way.

Voluntary Reports—The Commerce Dept. is the first to admit that the published data is no better than the figures reported to them by industry. Reporting is entirely a voluntary action by companies queried. Some reports are good, some are not so good.

Rarely are reported inventory figures based on physical counts. A number of economists refer to these inventory figures as "residual." That is, once a year many companies take a physical count of their stocks. From then on, in reporting inventory figures, they add stock receipts and deduct stock withdrawals from the count to come up with the figure they give to the Commerce Dept.

Adds Mr. Bridge, "Some companies, of course, never, or rarely, take a physical inventory. They rely on their book records."

Book Values Only — Another point to be realized in using Commerce Dept. inventory figures is that the data represents book value, not physical volume.

As little as a 1 pct change in prices in inventory commodities can go a long way in hiding movements in physical volume of inventory. For example, if manufacturing inventories in one month had a book value of $55 billion and prices rose from $100 to $101, then book value in the following month would jump by $550 million. And yet, purchasing agents buy, or don't buy, for stock replenishment on the basis of volume or amount of stock on hand.

So, from a practical view, in using these figures it will pay a market analyst to look at the inventory figures and then take a hard look at price movements for the month in the commodities included in the inventories.

At any time, published inventory changes may represent inventory adjustments rather than actual inventory accumulations or decumulations. This is important to bear in mind when noting year-end stock movements.

Inventory Breakdown—Probably one of the most important phases of inventory management lately has been in maintaining effective balances in stock by stages of fabrication.

But the inventory data listed by stages of fabrication in the Commerce Dept's. survey is the weakest element. This is because very few companies report their inventories to the government on this basis. Says Mr. Bridge: "We are not happy with these figures."

Mr. Bridge cites a hypothetical case of two steel companies of very similar size and operations. One reports 4 pct of its inventories in finished goods, the other, 20 pct. This illustrates that the all-important "stages of fabrication" inventory data must be used with particular caution.

Cautions — Here's what Mr. Bridge says about using the Commerce Dept. inventory data: "These figures should be used as broad indicators. Don't try to milk them to the last digit."

He adds: "While we don't publish inventory breakdowns that are misleading because of inadequate submitted figures, we still cannot completely sanction any of the breakdowns. Our figures are valuable as trend information, not as indicators of true levels."

Mr. Bridge believes there is closer control of inventories by industry than in the past. But he believes there is still a relative lag in accounting and management attention to inventories.

"Weakest Statistics" — "Inventories are probably the weakest statistics in the Commerce Dept. reports," says Mr. Bridge. "But this is not just a data collection problem. Take a look at the books of individual companies."

U.S. Ore Falls Before Imports

Domestic iron ore sources in the Lake Superior district face one of their leanest years.

Ore docks are piled high on the lower lakes. And mills have large commitments and investments in overseas sources.
By T. M. Rohan

■ The controversy over domestic ore and imports is bound to spread this year as foreign sources continue to displace domestic mining.

In Venezuela and other South American countries, ore producers are shipping as much ore as possible in fear of expropriation.

The Lake Superior district in the U. S. is the most directly affected—and it faces the prospect of the lowest output in years.

Even Less in '61—Early estimates set 1961 shipments from the district at about 45 million tons. This would be slightly under the 46 million tons shipped in strike-crippled 1959, which was the slowest year since 1939. Last year's Great Lakes shipments totaled 69.6 million tons.

There were about 37 million tons of iron ore at lower lake ore docks and yards at the start of the Great Lakes shipping season last April. This year there will be about 53 million tons. Barring a sudden, sharp upturn in steel demand, this difference will be deducted from this year's shipments.

Why No Cry?—Imports of high-grade foreign ore are a cause of deep concern in the Minnesota mining industry. But a protective tariff has attracted few backers. For one thing, many parent companies of U. S. mines have interests in foreign ore sources. And the Steelworkers Union also represents miners in the new Labrador and Quebec mines as well as the Lakes mines.

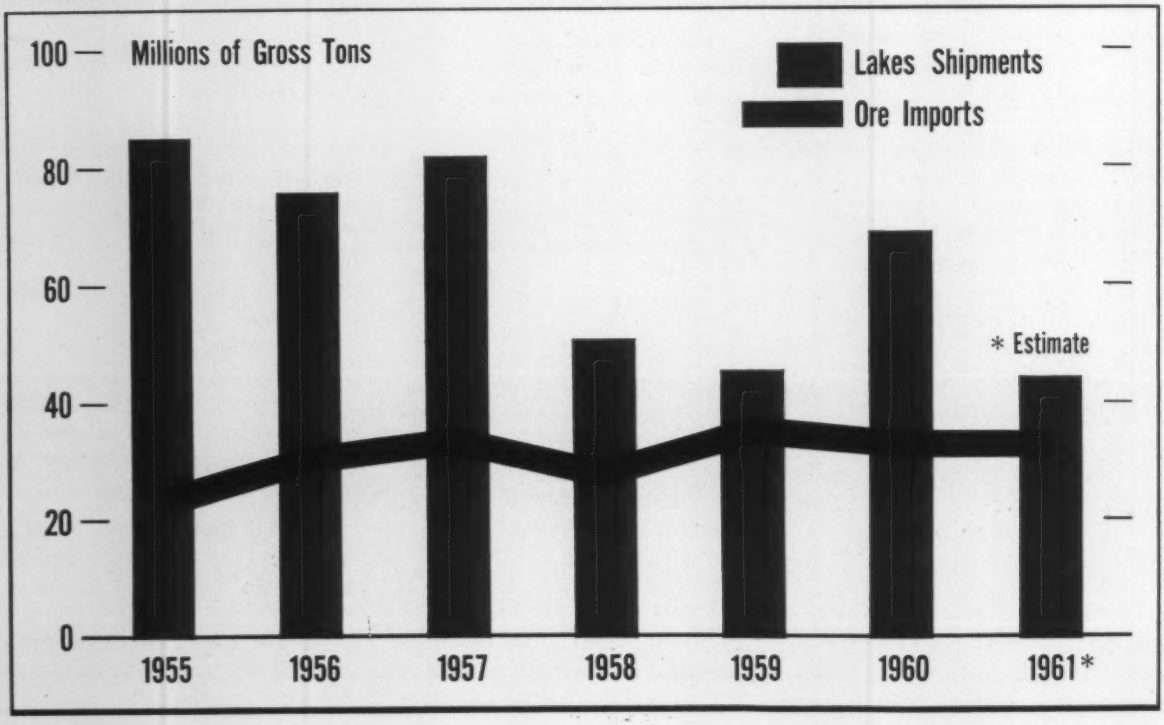
However, a clamor for relief could come from unemployed miners, independent mining companies and state governments. This, despite the fact that few have spoken up so far.

History on a Slide — Through World War II the Lake Superior district historically supplied 80 pct of all of the iron ore used in the U. S. But the percentage has dropped drastically—to 54 pct in 1958 and 47 pct in 1959.

Through 10 months of the 1960 season, U. S. imports totaled 31.3 million tons, against the 69.6 million tons from Lake Superior mines. And more than 1 million tons of this latter total came from Canadian mines.

Iron ore imports increased from

Mills Trim Buying from Domestic Ore Sources



8.2 million tons in 1950 to 23.4 million by 1955, up to 35.6 million in 1959 and more than 32 million tons last year.

Favor Imports — Foreign mines are favored for several reasons: Commitments to foreign countries, huge foreign capital investments, and the general high metal content of foreign ores. So the general trend is toward greater imports.

Despite the present ore glut, the need for more ore is bound to grow. W. H. Johnstone, vice president of Bethlehem Steel Co., predicts the U. S. will need at least 60 million tons of imported iron ore annually by 1965. And the need could well reach 65 million tons.

In addition, world market needs are growing. One or more big, new projects must be undertaken in the next 5 to 10 years to stave off a world shortage of ore with resulting rising prices, Mr. Johnstone believes.

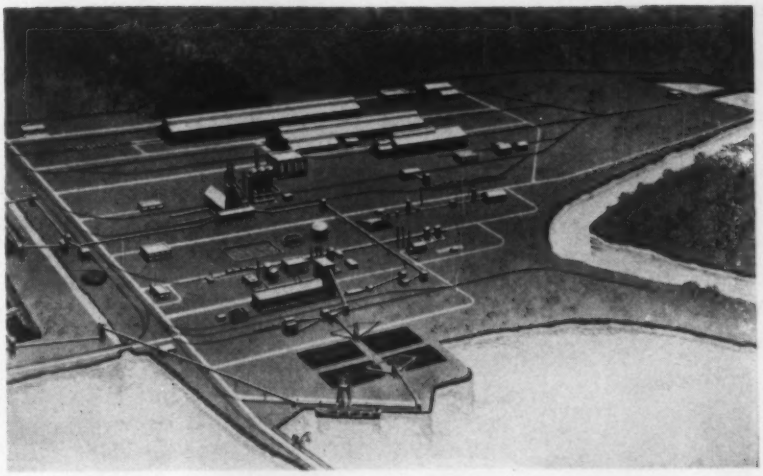
The Americas—Canada now exports about 17 to 20 million tons per year to the U. S. and Europe. It probably will be able to produce 34 million tons by 1965, according to R. W. Whitney, vice president of Hanna Mining Co., Cleveland.

Venezuela is the biggest shipper from South America. And prospectors are looking for more deposits in the country. It exports about 15 million tons of high-grade ore to the U. S., or about as much as Canada.

Orinoco Mining Co., a subsidiary of U. S. Steel Corp., is considering expansion of capacity to 18 or 20 million tons annually. With other projects underway in Peru, Chile and Brazil, the South American potential is double or triple the present rate of 20 million tons per year.

Hope for Comeback—The Mesabi's big hope for a comeback is beneficiation. And it is already going a long way toward heading off imports. Pellets of taconite and jasper were still in a sellers market last year and commanding a premium.

Two producers alone shipped over 10 million tons. And there are six other taconite plants in Minnesota, Michigan and Ontario.



A BIG ADDITION: An artist's sketch of the new Eregli Iron and Steel Works in Turkey shows (in near foreground) where ships will load and unload. The mill will be the second, but biggest, in Turkey.

U.S. Loan Builds Turkey Steel Mill

DLF has agreed to a record loan for overseas industrialization.

A new steel mill in Turkey will get $129.6 million. Three American companies are involved in the deal.

■ The Development Loan Fund has agreed to loan $129.6 million for the financing of one-half of an integrated steel plant on Turkey's Black Sea Coast.

This is the largest single U. S. Government loan ever made for an industrial project overseas. Total cost of the project, to be known as the Eregli Iron and Steel Works, will come to $245 million.

DLF funds will be used for the procurement of materials and services for the facilities from the United States. When finished, the plan calls for a by-product coke plant, a blast furnace plant, a basic oxygen furnace plant, rolling mills and power and steam plants.

Strong Output—The initial plant output is estimated at 470,000 annual tons of ingot. However, it's designed for ultimate expansion to more than one million tons annually.

Three U. S. companies will be active in the new operation. Koppers Co., Inc., Westinghouse Electric International Corp., and Blaw-Knox Co. have joined to form Koppers Associates. Koppers is undertaking the design, general engineering, procurement activities, and construction supervision of Eregli. It is also entering into a management contract for the operations of the plant.

More Financing—Chase International Investment Corp. plans to join with DLF and Koppers in financing the bulk of the $168 million foreign exchange requirements of the plant.

Turkey presently has one integrated steel mill (located at Karabuk), but this plant produces only basic steel products such as structural sections, bars and rails.

For GE's Radar and Underwater Detection Equipment

READY FOR USE: General Electric Co.'s new $8 million engineering and manufacturing facility in Syracuse is ready for operation. It will be used for the design, development, production, and testing of radar and underwater detection equipment manufactured for the military. Workmen (left) complete installation of telephone circuits. High fluorescent lights (right) are used for lighting.

Metal Imports by Navy Stir Up a Storm

The use of foreign-produced metals in Navy shipyards has started a controversy in Washington.

Investigations by the Defense Dept. and the Office of Civil and Defense Mobilization are underway to find out if imported metal used on government shipbuilding projects is cutting into the business of U. S. metalworking firms.

The probes are based on complaints from Sen. Thomas H. Kuchel, (R.-Cal.), that the Mare Island, Cal., naval shipyard has stocked "a considerable quantity of stainless steel and aluminum sheets from abroad."

Sen. Kuchel says, "It appears that metal products essential for ship construction, modernization, upkeep, and repair are being imported from abroad for use at Navy yards, despite the disturbing fact that domestic plants producing the identical goods are operating on a drastically curtailed basis and are eagerly seeking customers for their output."

Defense Secretary Thomas Gates ordered the Navy to report to him on the matter. The OCDM has begun its own probe.

At present, Navy and OCDM officials question whether the use of imported metals on government shipbuilding projects is "considerable." One official characterizes the foreign metal as "a drop in the bucket."

Wyman-Gordon Expand Beryllium Machining

Wyman-Gordon Co., Worcester, Mass., is completing expansion of its facilities to process beryllium forgings.

The company will soon conclude a $3 million expansion with the increase of present processing quarters.

In addition, the company will transfer precision forging equipment from its Franklin Park, Ill., plant this month, allowing it to forge small beryllium parts as well as larger components. This equipment will also be used for other metals.

The moves will round out the company's facilities for improved output of beryllium from powder form through forgings to machined parts company officials say. Processing space will be increased from 4000 to 16,000 sq ft.

Sharon Makes Bright Annealed Stainless

Sharon Steel Corp. announces completion of a new unit for production of bright annealed stainless steel. The new line, built at a cost of $1 million, is located at the Roemer Works of Sharon at Farrell, Pa. It will go into operation this month.

Bright annealed stainless strip will be produced from .010 to .100 in. in thickness and in widths up to 23 15/16 in.

Commenting on the development, W. J. McCune, vice president-commercial for Sharon, says, "A bright finished stainless steel with outstanding corrosion resistant qualities is a must in the automotive industry. . . .This is also one of the first economical methods in producing a durable, bright finish on stainless steel."

(For more details on bright annealed stainless see IA, Nov. 3, '60, p. 51 and Jan. 5, '61, p. 93.)

INDUSTRIAL BRIEFS

Waltham to Lexington — The Boston district office of the Jones & Lamson Machine Co., Springfield, Vt., transferred operations from its present quarters in Waltham, Mass. The new location is in a larger suite of offices at 442 Marrett Rd., Lexington, Mass., in the Daniel Curtain Office Bldg. This new office provides sales, engineering, and service on all Jones & Lamson products.

In Complete Control—Leeds & Northrup Co., Philadelphia, acquired all outstanding shares it had not previously owned of Integra, Leeds & Northrup Ltd., Birmingham, England. This subsidiary has been renamed Leeds & Northrup, Ltd. A substantial additional capital investment is involved, to expedite a program for improvement of plant and facilities.

Cerro's Shorter—Cerro de Pasco Corp., producer and fabricator of nonferrous metals, has changed its name to Cerro Corp. The change, effective January 1, was in line with action approved by stockholders at the annual meeting last May.

Pressing West—A new national organization for powder metallurgists, the American Powder Metallurgy Institute, has formed a section of the Institute in the Los Angeles area. Officers of the West Coast Section were elected as follows: R. H. Khuen, ASCO Sintering Corp., chairman; J. Q. Adams, Consultant, first vice chairman; Robert Remington, Picco, Inc., second vice chairman; R. H. Barden, Micrometals, treasurer; Lester Kuzmick, Felker Mfg. Co., recording secretary; and W. F. Graden, Hoeganaes Sponge Iron Corp., corresponding secretary.

Welded Together—The S.M.S. Corp., Birmingham, Mich., manufacturers of resistance welding materials, merged with P. R. Mallory & Co., Inc., Indianapolis. It has been a wholly-owned subsidiary of Mallory Company for ten years. S.M.S. manufacturing facilities in Birmingham will continue to be operated and have been designated as the Birmingham plant of the Mallory Metallurgical Co., a Div. of P. R. Mallory & Co., Inc.

Deal for Heil—The Heil Co. acquired the materials handling equipment business of the Ingersoll Kalamazoo Div., Borg-Warner Corp. Machinery and fixtures used in producing materials handling equipment will be moved from Kalamazoo, Mich. to Heil's main plant in Milwaukee. It will be operated as part of its Body and Hoist Div.

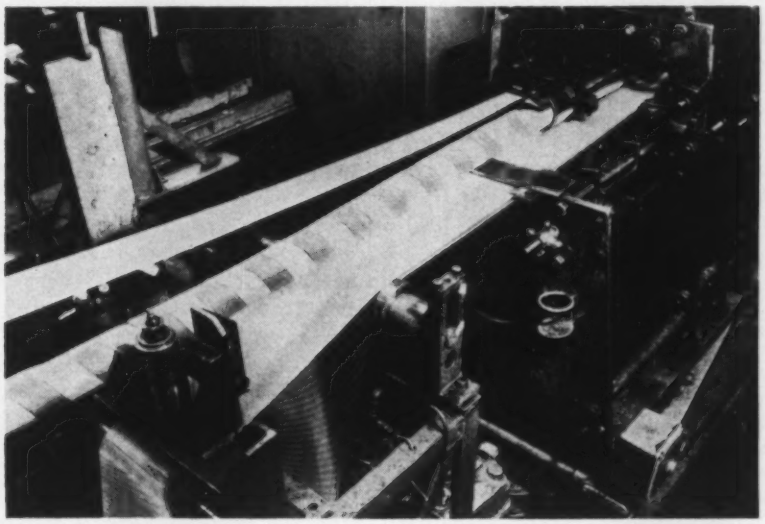
All Together, Now — Simonds Saw & Steel Co. opened a new southern California branch warehouse, sales office and service shop in Los Angeles. Located at 1950 E. 20th St., the new branch will function as a combination facility for Simonds Saw & Steel Co. and its subsidiaries Simonds Abrasive Co. and Heller Tool Co.

Going South—Square D Co. has purchased from Gorham Manufacturing Co. a 98,000 sq ft plant located on 35 acres on the outskirts of Asheville, N. C. The plant is expected to employ 200-300 workers and will serve as headquarters for Square D's Commercial Control Div.

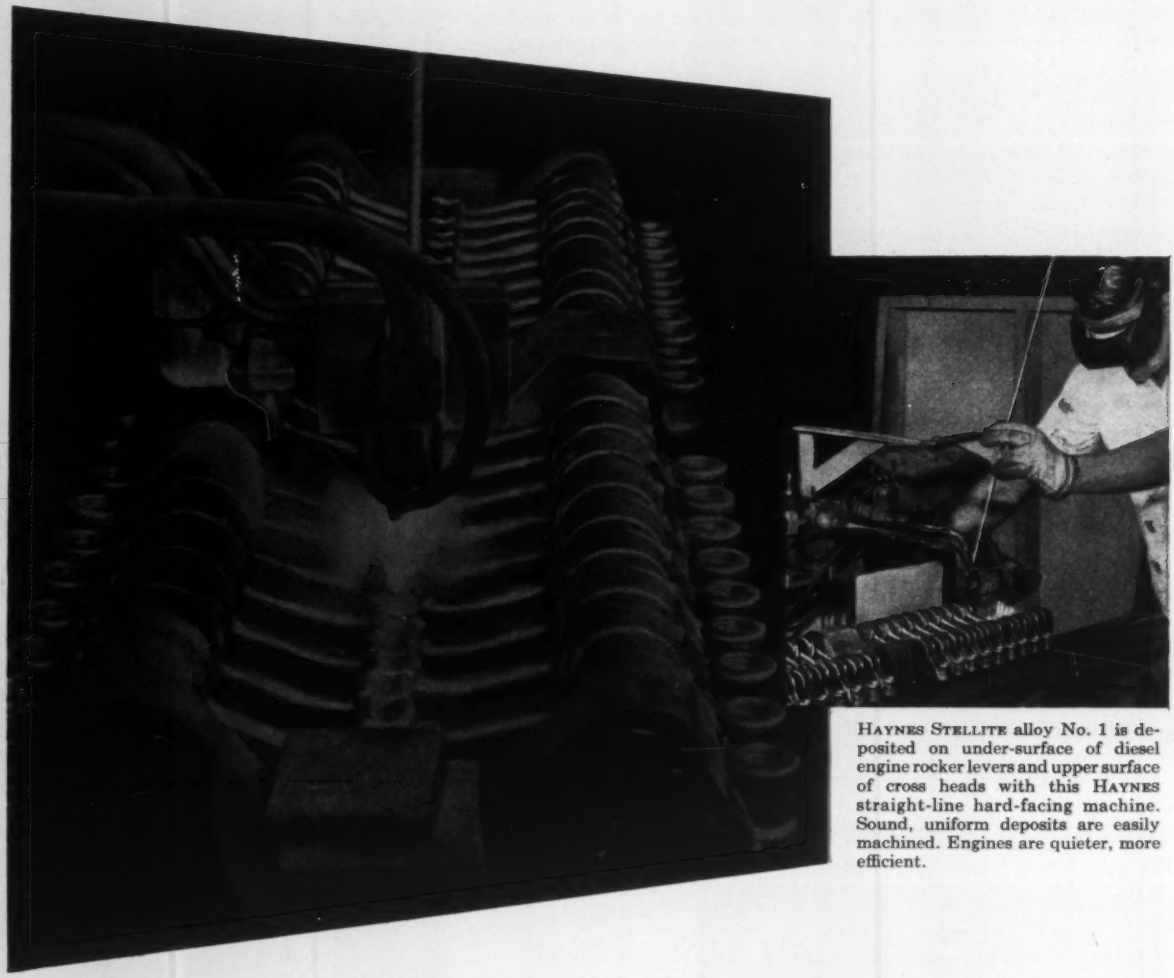
Add One in Wilmington—The Heisler Corp. is opening a second plant in Wilmington, Del. New facilities will include 60,000 sq ft of warehouse space and accommodate both rail and truck shipments. New compounding equipment is also being installed in the plant to supplement present equipment. This second phase of Heisler's expansion program should be completed by February 1, 1961.

Barbara's Getting Ready—American Zinc, Lead & Smelting Co. will recondition its Barbara J. mill at Cardin, Okla. It is estimated the mill will be ready to receive ores not later than March, 1961. Milling charges will be set as low as possible in order to assure maximum mill production. It's expected the mill will be treating about 25,000 tons of ore a month by the end of the second quarter of 1961.

Telephone Cable Gets a Tin Jacket



BETTER THAN MINK: Wrapping a woman in mink may be just the thing to protect her from the elements, but a telephone cable is something else. Outer tin plate jacket and inner layer of aluminum emerge from corrugating rolls of automatic telephone cable sheating machine at Western Electric Co. Later they will be formed around a paper-wrapped cable core to protect it while in service.



HAYNES STELLITE alloy No. 1 is deposited on under-surface of diesel engine rocker levers and upper surface of cross heads with this HAYNES straight-line hard-facing machine. Sound, uniform deposits are easily machined. Engines are quieter, more efficient.

HAYNES Rods Speed Up Production

Minimum deposit dilution. Close deposit control. Faster final machining. More operating efficiency in the end-product.

These are the advantages a major diesel engine manufacturer gained by hard-facing the wear areas on rocker levers . . . using HAYNES alloy hard-facing rods.

HAYNES alloys are available in a complete line of hard-facing rods that can speed up production. For parts subject to impact, abrasion, heat, corrosion, erosion—HAYNES iron-, nickel-, and cobalt-base alloys give the desired properties. Where extreme abrasion resistance is needed, there's HAYSTELLITE tungsten carbide tube rod. All can be applied by manual methods or with semi-automatic equipment. For spray hard-facing, HAYNES nickel-base, cobalt-base, and tungsten carbide powders are available.

Our field engineers can help you determine which to use. Write for full information on the wide range of HAYNES Hard-Facing Alloys.

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How To Spot Executive Talent

With the need to train and hold good managers so critical, it's important not to overlook prospects.

But how can you estimate the emotional qualities a successful manager needs?

■ One of the soundest investments any company can have is a good management development program.

At no time has the need to train and hold capable managers been more important. Surveys by executive recruiters show that really top-level executives continue in short supply.

Upgrading Tried — "Company managements are taking an even keener look internally at those holding key executive positions," says Heidrick and Struggles, Inc., Chicago and Los Angeles-based recruiters. "There is a definite tendency toward upgrading men of caliber, and a more realistic appraisal of marginal men."

The need for developing executive talent is pointed up in another survey, this by Executive Manpower Corp., New York. During 1960, according to those answering the poll, more executives were selected from within the companies (54 pct), than were hired from the outside (46 pct).

Stay Inside — Says Executive Manpower: "Companies still have many new executive openings, but replacement jobs brought about by promotion, retirement, or death have an increased importance today."

Obviously, such positions are more easily filled by "home-grown" executives, rather than imports. The emphasis, then, is on discovering and developing sound executives.

What Managers Need — But what's the best way to evaluate management potential? Some worthwhile suggestions are advanced by Dr. Ottis K. McMahon, writing in the Atlanta Economic Review.

One of the critical areas, he says, is the man's intellectual competence. Decisiveness is a part of this area. "Successful top executives have the mental guts to make decisions and make them stick. The boss who talks over his problems with his people and gets their angle on the issues is doing a lot to win their cooperation. But he can't rest on that, and he can't make them decide on the answer, as some do. He is the one to decide."

Insight and Understanding—An executive must have insight—about his own strengths and weaknesses, as well as understanding why others act and feel as they do. He must be able to organize and direct—mostly through his ability to delegate effectively.

Finally, one of the most difficult demands on an executive is the ability to detach himself more and more from operations and apply himself to the development and growth of others. "His accomplishment is measured in terms of the enthusiasm, learning, and performance of his subordinates," says Dr. McMahon.

Are Engineers Undervalued?

■ How effectively are engineers used in industry?

Industrial managers and engineers seem to disagree sharply on the question. And a lack of communication appears to be part of the problem.

At least these are some of the conclusions of a study conducted by Opinion Research Corp. under sponsorship of the Professional Engineers Conference Board for Industry, in cooperation with the National Society of Professional Engineers. It was based on 350 interviews with engineers and managers located in various parts of the country.

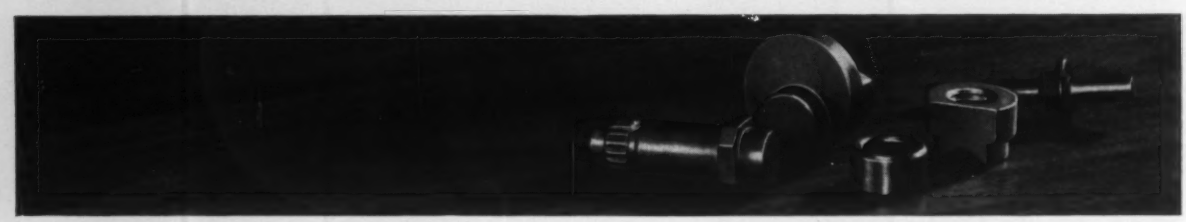
Second-Class?—Some of the results:

One out of four engineers believes engineers are thought of as second class professionals. But none of the industrial managers agreed with this opinion.

Most of the engineers questioned (61 pct) think there is considerable mal-utilization of engineers. Only 30 pct of the managers agreed.

Closer Contact Needed—The report notes, "Obviously there needs to be a greater meeting of the minds on what professionalism means and how it can be achieved —in short, more two-way communication."

Gains special part at half cost



RB&W survey seeks out ways to economize with cold formed special parts as well as with standard fasteners

Standard fasteners and many cold formed parts are closely related. They're offspring of the same machine. When called in to survey fastener usage, therefore, the RB&W Man can also ferret out those special parts which could be produced faster and for less money on RB&W's cold headers or nut formers.

The hand-held part above, for example, is a car trunk hinge spacer. Its cost was cut 50% when RB&W cold-formers took on the job of pounding them out at high speed, smoothly finished, and ready for installation.

By buying such parts, instead of making them, you save in one or more ways. (1) There's less machining time—or none at all. (2) Assemblies of several small pieces can be made as a unit—reducing assembly costs. (3) When shape of piece is such that you would have to machine excessively from relatively large diameter rod, you avoid heavy scrap loss. Sometimes cold forming becomes the *only* way to economically produce a piece—as for example, the eccentric cam shown above.

To get the most from your dollar in standard fasteners or specials, find out what the RB&W Fastener Specialist can do in cooperation with your engineers. Or write about your requirements in special parts directly to Russell, Burdsall & Ward Bolt and Nut Company, Port Chester, N.Y.

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116th year

Plants at: Port Chester, N. Y.; Coraopolis, Pa.; Rock Falls, Ill.; Los Angeles, Calif. **Sales office and warehouse at:** San Francisco, Calif. **Sales offices at:** Ardmore (Phila.), Pa.; Pittsburgh; Detroit; Chicago; Dallas. **Sales agents at:** Cleveland; Milwaukee; New Orleans; Denver; Fargo. **Distributors coast to coast.**

Ford Readies More Compacts

Ford is placing increasing emphasis on the fast-growing compact car market.

It has two more compacts in the works. And it would like to get one in production by spring. —By A. E. Fleming.

■ Two new Ford Motor Co. compact cars, which will come out later this year, are part of a program which ex-president R. N. McNamara had been developing before he left for Washington.

The new Secretary of Defense had a strong feeling for the specialty car market. He wanted to swing the company sharply into the compact market, and to continue to build up strength in this area during the next few years.

Ahead of GM—The aim was to retain a dominance over General Motors Corp. in the compact market. (1960 production: Falcon and Comet, 703,000 cars; Corvair, Tempest, F-85, Special, 368,000).

One of Ford's new models fits between Comet and Mercury. The other is between Falcon and Ford. They will come in addition to the so-called Cardinal, the Volkswagen-size model.

Spring Production? — Some of Ford's marketing people, influenced by the successful introduction of the Comet last March, are anxious to bring out at least one of the new compacts by late spring. But this is unlikely, perhaps impossible. It would take a real jam-up rush job.

However, the cast iron V-8 engine which will go into them is said to be scheduled for production in the spring at a Cleveland plant.

No Sacred Cows — The uninspired showing of the regular Ford this year also can be regarded as a reason for the arrival of two more compacts. Production of regular Fords sank to 1,004,000 units in 1960 from 1,427,000 in 1959. Competitor Chevy's big cars jumped to 1,614,000 from 1,349,000.

Word is spreading that the new compacts may take the place of some larger Ford or Mercury models in the 1962 model year. Fat would be cut off the Ford family of cars. Apparently there will be no sacred cows.

New Auto Leaders?

Speculation in Detroit over the naming of new Ford Motor Co. and Chrysler Corp. presidents grew this week as the board of directors of the two companies collected in New York for January meetings.

Only one name is suggested as a Chrysler presidential candidate when speculators meet. He is 41-year-old L. A. Townsend, appointed to the No. 2 post of administrative vice president in December.

In contrast, the candidate list at Ford is bulging. Among the choices are J. S. Bugas, international group vice president; J. O. Wright, car and truck group vice president and group executive; I. A. Duffy, general products group vice president; John Dykstra, manufacturing vice president; and A. R. Miller, vice president and controller.

Romney Apologizes

American Motors Corp. president George Romney says he erred in charging General Motors Corp. with intent to use overseas facilities to import automotive components into the U. S.

"It was a seriously inaccurate assertion in the verbatim account of my press conference statement in New York on Dec. 15," he says. "General Motors facilities abroad weren't established for the purpose of importing automotive components, and there's no evidence of that intention now."

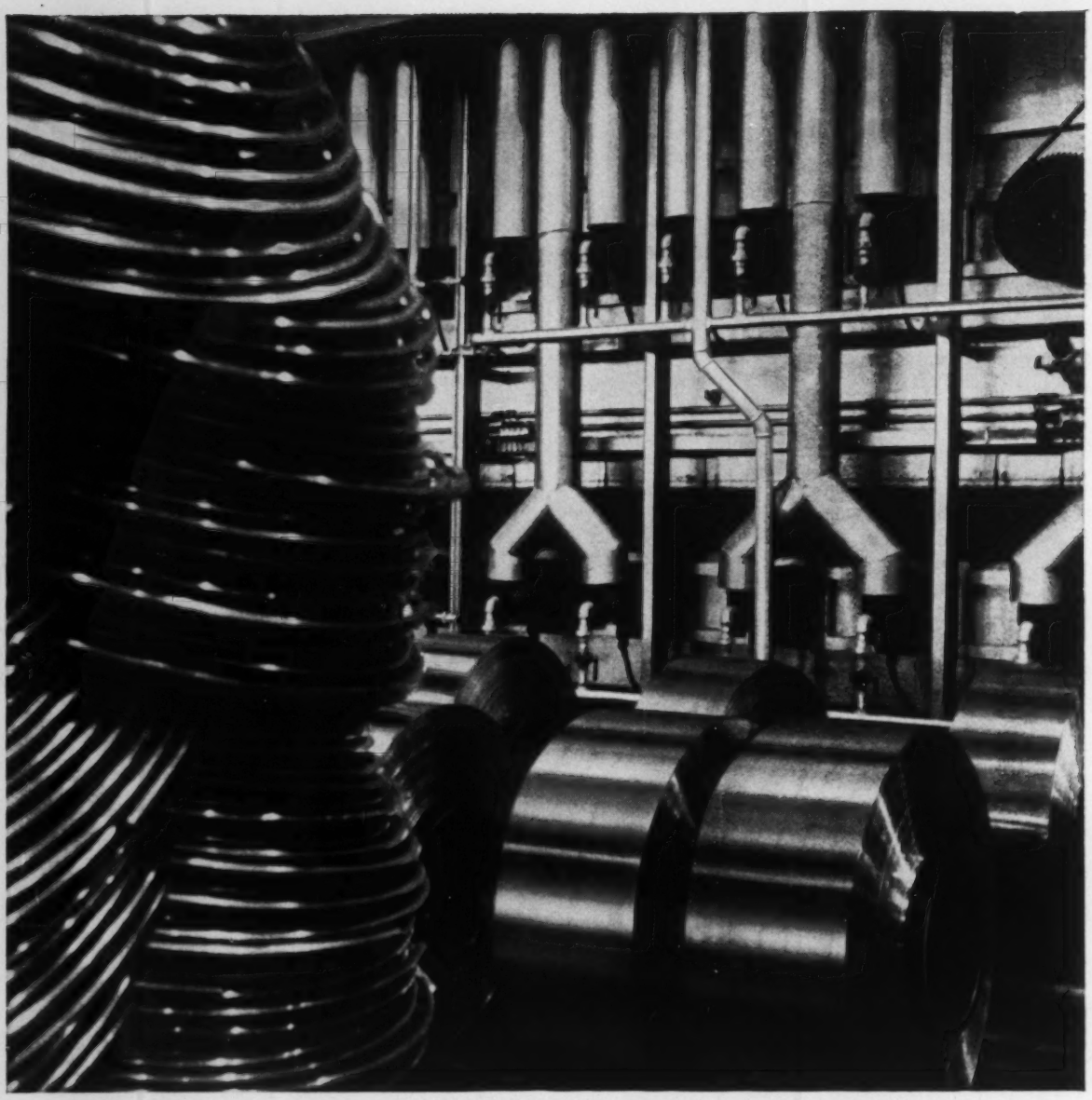
Front Wheel Drive Is Hot Topic

Bendix Corp. officials came to Detroit to display some new, but as yet unmarketed brake concepts to auto makers. But the subject of front-wheel drive got almost as much attention as the brakes.

M. P. Ferguson, Bendix president, says that during a recent trip to Europe he was impressed by the small front-wheel-drive cars over there. "Considerable emphasis is being put on it overseas," he reports. "It's getting serious consideration in many areas."

Mr. Ferguson says one foreign licensee will start to make a Bendix constant velocity joint a year from now. "It will be produced on an automated basis and the cost will be competitive with the Carden joint," he claims. U. S. cars have used the Carden joint for many years, but it is not deemed practical on a front-powered car.

Such European makes as Citroen, DKW, SAAB and Auto Union are driven by the front wheels. Ford Motor Co. has shown a great deal of interest in it for some time and reportedly will use it for its forthcoming small car. Variations of constant velocity joints now in use are the American Bendix-Weiss and Rzeppa (Dana Corp.), English Birfield and French Tracta and Hooke.

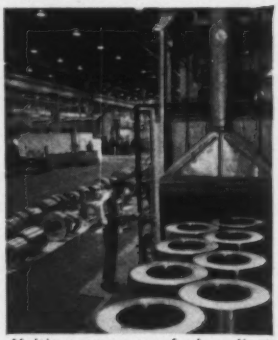


American Brass relies on GAS for precise control in heat processing

Five huge gas-fired furnaces handle heat processing at the new American Brass Company plant near Los Angeles—largest copper and brass mill in the West.

Gas heat anneals their copper and brass coils, tubing and strip . . . processes copper billets for extrusion and for piercing . . . and bright-finish anneals copper coils and tubing.

Why the choice of gas heat? Precise temperature control! Gas heat develops the required temperatures rapidly. Maintains them precisely. Adapts most easily to automatic temperature control. Offers unbeatable fuel economy.



Multi-purpose, gas-fired, radiant tube, forced circulation roller hearth furnace at American Brass Company's new Los Angeles mill. Used in the bright finish annealing of copper coils, tubing and strip.

American Brass, and thousands of other companies, can tell you *gas* is technically right and economically sound for all types of heat processing. Call the Industrial Sales Engineer at your local gas company. *American Gas Association.*

FOR HEAT PROCESSING GAS IS GOOD BUSINESS!

Farwest Steel Upturn Predicted

Order Increase Expected in Second Quarter

Inventory reduction won't depress steel in '61 as it did in '60, says J. D. McCall, president of Columbia-Geneva.

Other West Coast executives only mildly confident about first quarter prospects.
By R. R. Kay

■ What does 1961 hold in store for the Farwestern economy?

Industrialists, businessmen, and economists are a lot more conservative in their predictions than they were a year ago. But they pretty much agree that the year will wind up a good one.

J. D. McCall, President, Columbia-Geneva Steel Div., U. S. Steel, says, "Increased orders for the products of Western steel mills are expected for the second quarter of 1961 to meet the continuing growth here.

Follows Good Year — "The amount of steel actually consumed in 1960 puts that year among the highest in history. A shift from inventory building to inventory reduction resulted in an overall drop in steel production," Mr. McCall says.

"This year, particularly in the second half, we do not expect to see steel output depressed by inventory reduction. This should result in a stimulating upturn in steelmaking operations. And Western construction activity should continue at a high rate, resulting in a strong demand for steel," Mr. McCall predicts.

Business Leaders Less Optimistic

Every three months Prudential Insurance Co. polls 1000 Farwestern business leaders. It asks: What's your opinion on how your business will do in the next quarter?

Here are a few highlights from the company's just released Western Business Forecast: 37 pct of those polled expect their dollar volume in the first quarter to be above the last quarter of 1960. About 22 pct expect no change in the level of their activity, and 41 pct look for a drop from the final 1960 quarter.

Some 64 pct predict that their first quarter business will equal or exceed the first quarter of last year.

Dwindling Hopes—The optimism of the panel has been dwindling for a year and a half. Right now, it's at the lowest ebb since the second 1958 quarter.

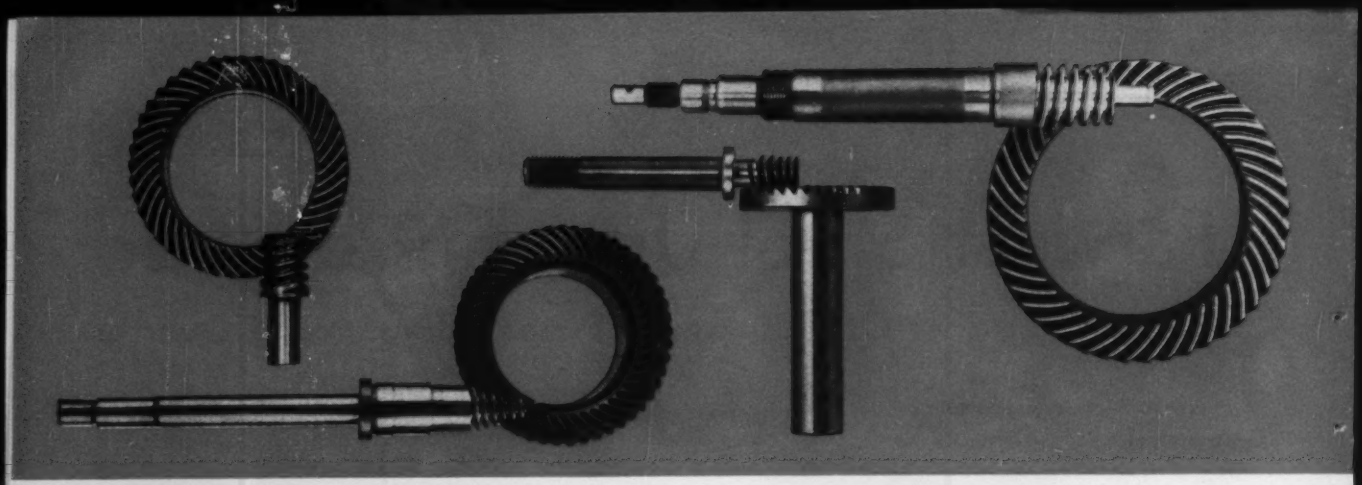
Which industries does the current survey show are the most optimistic? Transportation and public utilities. Here, 75 pct predict their business in the first quarter of 1961 will equal or top the like 1960 period.

Who's Optimistic? — Construction, agriculture, and extractive are the only industries which are measurably more optimistic than three months ago.

Panelists of the Northern California-Hawaii region look for a good first quarter. More than 75 pct of them predict that their first quarter 1961 volume will equal or exceed the same 1960 period.

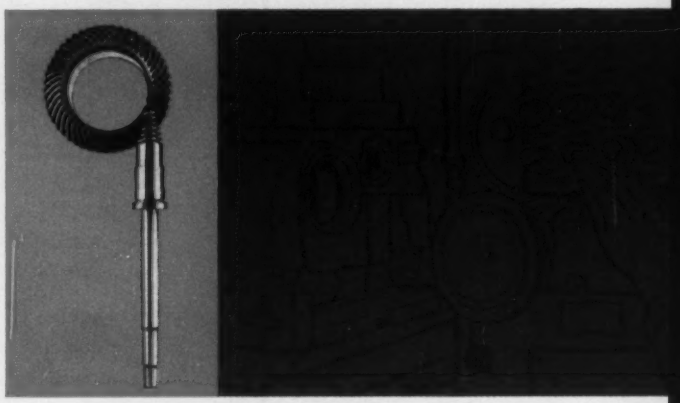
Jetliner Proves Light on Its Feet

TRAMPOLINE FOR 990: As part of test program, Convair 990 jet airliner had a three-week "workout" on this trampoline-like arrangement. It consists of three units like this, where electro-magnetic drivers are placed on wing tips, tail, and control surfaces to shake the plane.

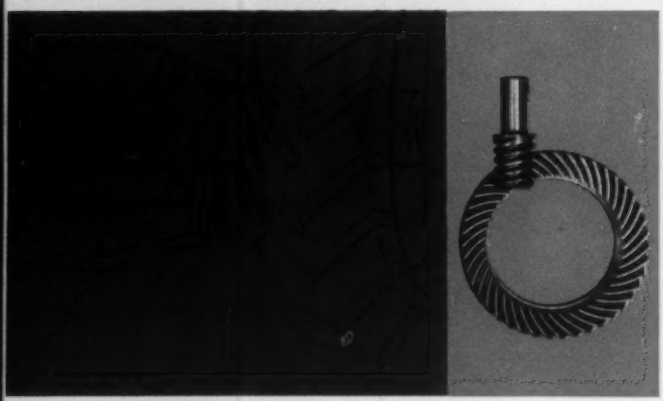


WHICH OF THESE HIGH-RATIO HYPOIDS IS "JUST RIGHT" FOR YOUR PRODUCT?

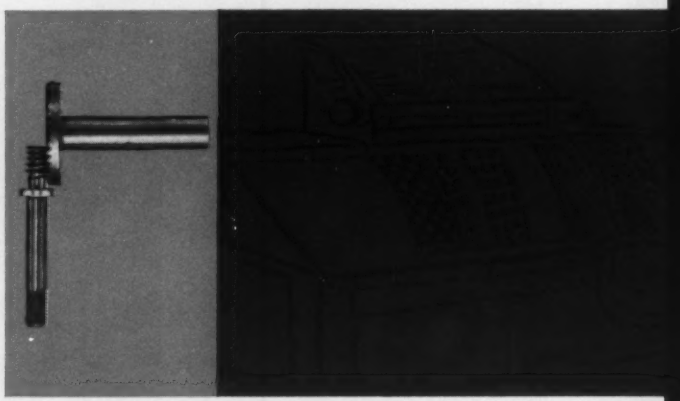
For hand tools. Where space is a problem—as in portable tools like this one—the high offset lets you design a more compact unit. Choose just the offset to solve your design problem with a more flexible, more compact unit than the corresponding worm and wheel.



. . . or machine tools. This high-offset pair lets you combine high reduction with strength, compactness and other advantages you might find profitable in designing machine tools. High-ratio hypoids can be produced on Gleason equipment for ratios of 1:10, 1:40 or even higher.



Big and strong. Where you need strength—as in farm machinery—high-offset hypoid pinions (with teeth which tend to "wrap around") are larger and stronger than corresponding bevel pinions. An extended shank on cylindrical pinions makes very rigid straddle mountings practical.



. . . or small and smooth. For smooth operation—as in office equipment that must run quietly—high-offset pairs provide smooth, quiet tooth action. Because teeth "wrap around" the pinion, you get continuous action—even with just one or two teeth! Grinders are available for applications requiring precision finish.

High-offset or high-ratio hypoids can be cut, tested, and quenched on the same Gleason equipment that is used on more familiar spiral bevel and hypoid gears. You can get more information about Gleason high-ratio hypoid gears by writing for free literature. Submit your prints for recommendations.

GLEASON WORKS

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Metcut Provides Machining Data

New Service Establishes a Central Information Source

A metals research company is expanding its services to provide a central source for data.

Particularly helpful will be machining characteristics of the new space-age materials.
By R. H. Eshelman

■ The gap in machining data is on the way to being narrowed a little more. And production engineers will be able to get standard information from a single source for a wide range of operations and materials.

Those are benefits promised through a new program and service originated by Metcut Research Associates of Cincinnati, noted for its contributions to the science of metal cutting.

Central Data Source—Company executives explain their new machining data center is designed to provide metalworking industries with the most advanced information and aid in solving space-age production problems.

In addition to providing a central source of data, the program calls for research on hard-to-machine materials such as tungsten and ultra-high strength steels. Also on the program is development of new techniques for removing metals.

Information Sources — Another phase, already underway, calls for gathering machining data from all sources — literature, the group's own files, and data contributed by other organizations. All types of machining problems come within the scope of the program, according to Norman Zlatin, program director. Some that are included: Residual stress, distortion, fatigue strength, and other variables is affected by machining operations.

INFORMATION PLEASE: Characteristics of new alloys are being discussed at Metcut by (left to right): Norman Zlatin, Data Center director; Dr. Michael Field, president; and John Maranchik, Jr., assoc. director.

Metcut's laboratory will continue machining tests to develop general information needed to fill gaps in data available from outside sources.

Services Offered—Initially, data is to be cataloged for metals, alloys, ceramics, cermets and plastics. It will be extended to other materials as the need becomes apparent. In addition to furnishing specific machining information to fill requests, the staff will be available for field service to provide assistance in customer's plants.

Typical services envisioned include furnishing optimum machinability data on new and unfamiliar alloys to manufacturing companies. It would cover specification of best speeds, feeds, tool materials, tool geometry, and fluids.

Present Findings—Another facet will be to provide information on new alloys to machine tool builders to assist them in design of advanced equipment to handle machining problems of the future.

Present data developed by the research group shows that machine design changes are necessary to minimize distortion, damage and residual stresses in grinding high temperature, high strength alloys.

Ready With Experience — The Metcut organization has engaged in metallurgical and mechanical engineering studies for many years in addition to its machinability testing and research.

Ohio FORGED SLEEVES

and Cast Steel or Forged Steel Arbors for Back-Up Rolls

A Complete Back-Up Roll Service

Ohio Steel, manufacturers of all types of iron, steel and forged steel rolls, announces a new complete back-up roll service.
Operations Now Include:

• Alloy Cast Steel Back-up Rolls and Arbors. • Forged Steel Back-up Rolls and Arbors from vacuum poured, degassed steel. • Custom forged Back-up Roll Sleeves from vacuum poured, degassed steel applied to new or used cast steel or forged steel arbors. • Machine down and resleeve previously sleeved back-up rolls.

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OR-46

W. J. Edmunds, appointed general manager, Industrial Div., Kaiser Aluminum & Chemical Corp.

Yale Materials Handling Div., Yale & Towne Manufacturing Co. —**P. R. Hartig,** elected vice president and general manager.

Penn-Harris Steel Co.—**J. G. Wortley,** elected president.

General Electric Co.—**O. L. Dunn,** elected a vice president.

Eaton Manufacturing Co.—**Logan Monroe,** elected vice president, administrative, and **Hugh McKibbin,** promoted to controller.

Diamond Chain Co., Inc.—**J. E. Cooper,** elected vice president.

Melpar, Inc.—**R. E. Miller,** elected vice president, advanced development.

Dana Corp.—**J. R. Miller,** appointed group vice president, manufacturing, engineering and industrial relations.

Wheeling Steel Corp., Sales Div. —**A. F. Shearer,** becomes asst. general manager.

Kaiser Refractories & Chemicals Div., Kaiser Aluminum & Chemicals Sales, Inc.—**P. A. Gaebe,** appointed product manager, refractories.

Jones & Laughlin Steel Corp., Stainless and Strip Div.—**F. F. Goosmann,** appointed manager, architectural sales.

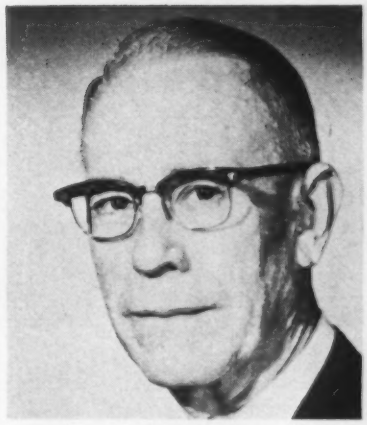
Air Reduction Sales Co.—**L. W. Kunkler,** appointed district manager, Buffalo office.

Loftus Engineering Corp.—**W. F. Kast,** appointed asst. chief engineer.

Precision Parts Div., Ex-Cell-O Corp.—**R. T. Volker,** promoted to asst. sales manager.

General Electric Co.—**S. R. Sulis,** named manager, instrument product planning, General Electric Instrument Dept., West Lynn, Mass.

Republic Steel Corp., Berger Div.—**D. A. Bordner,** appointed Detroit sales representative.



R. C. Craig, named purchasing agent, Purchasing Dept., Weirton Steel Co., Div. of National Steel Corp.

"POP" Rivet Div., United Shoe Machinery Corp.—**R. H. LeSage,** promoted to asst. product sales manager.

Cal-Metal Pipe Corp. of Louisiana—**H. E. Midkiff,** appointed sales manager.

Union Steel Products Co.—**Harry Gardner,** appointed manager, Marketing Services Dept.

The Producto Machine Co., Plastics Machinery Div.—**Sheldon Saslawsky,** appointed manager.

E. F. Andrews, elected vice president, purchases, Allegheny Ludlum Steel Corp.

L. H. Bassett, becomes plant manager, Los Angeles Div., Anaconda American Brass Co.

H. R. Stephan, appointed managing director, International Projects Div., Republic Steel Corp.

CM — mark of quality chain.

it's **BRANDED** for lifetime identification

it's **SAFER** because you can be sure of its grade (strength)

BBB — grade of coil chain made from low carbon steel.

HOW IT'S DONE — The mark is embossed onto, not stamped into, the link.

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In Canada: Columbus McKinnon Limited, St. Catharines, Ontario

YOU ARBITRATE IT!

Deciding Deadline

One Thursday morning, Pennsylvania was hit by a sudden snowstorm. Power lines were down over a wide area. Management of a steel mill sent all employees home. Some were given instructions to report the next day unless they heard otherwise; others were not.

A deadline was set for deciding whether work would be done the next day. When the deadline arrived and power was still off, three supervisors began calling the 110 men scheduled for the 8 a.m. shift. Twenty-nine could not be reached. When they arrived finding no work, they demanded four hours' call-in pay.

The personnel manager reminded the union of a contract provision. It read: "The call-in pay provision shall not apply in cases of breakdown or causes beyond the control of the company."

No Work With Pay? — "You couldn't control the snowstorm," agreed the international representative. "But if you had used more foresight and judgment you could have given timely notice to everyone not to come in. You had control over that, so you owe these 29 employees their call-in pay."

The case went to an arbitrator selected from the panels of the American Arbitration Assn. How would you rule?

The Arbitrator Ruled:

The issue boils down to whether the exception quoted by management makes the call-in pay provision inapplicable whenever the lack of work or the inability to give timely notice is due to a cause beyond the company's control. The company acted in good faith, but it wasn't sufficient to absolve it of call-in pay obligations. If the deadline proved too late in certain instances, the price would have to be call-in pay.

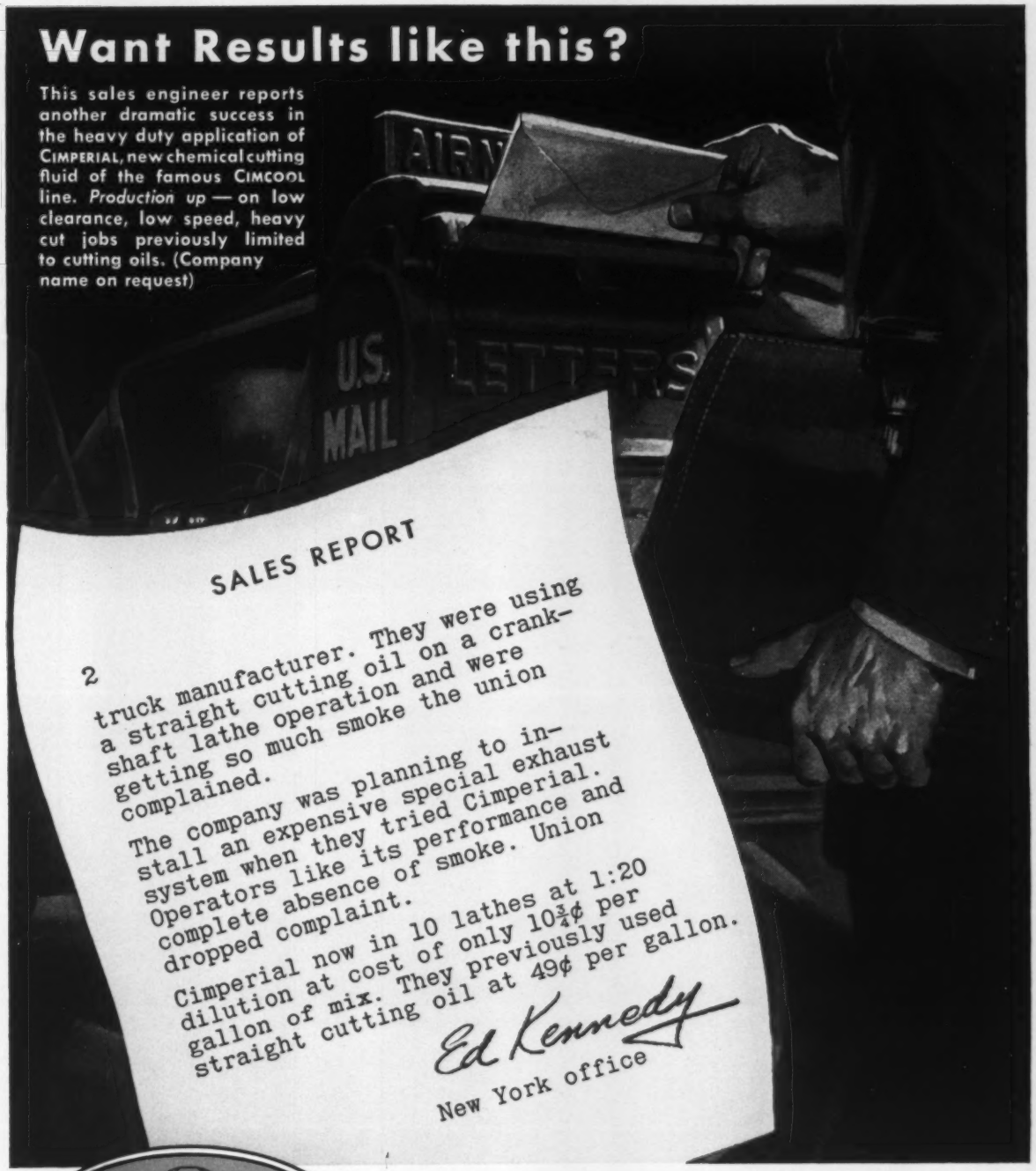
From the files of
The American Arbitration Association

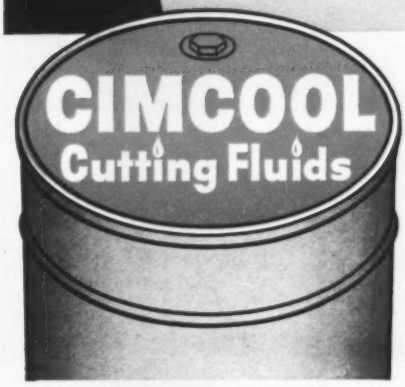
"You Arbitrate It!" appears in the second issue of The IRON AGE each month. Look for it in the February 9 issue.

CAUTION: The award in this case is not necessarily an indication of how arbitrators might rule in apparently similar disputes. Each case is decided on the basis of the particular history, contract, testimony and other facts involved. Some of these essential details may have been omitted in condensing the original arbitration for brief presentation.

Want Results like this?

This sales engineer reports another dramatic success in the heavy duty application of CIMPERIAL, new chemical cutting fluid of the famous CIMCOOL line. *Production up* — on low clearance, low speed, heavy cut jobs previously limited to cutting oils. (Company name on request)


U.S. MAIL
SALES REPORT
2
truck manufacturer. They were using a straight cutting oil on a crank-shaft lathe operation and were getting so much smoke the union complained.
The company was planning to install an expensive special exhaust system when they tried Cimperial. Operators like its performance and complete absence of smoke. Union dropped complaint.
Cimperial now in 10 lathes at 1:20 dilution at cost of only 10¾¢ per gallon of mix. They previously used straight cutting oil at 49¢ per gallon.
Ed Kennedy
New York office



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How to Store Sun's Heat

Materials for storing the sun's heat energy—needed for producing electrical power for satellites—are the focus of a NASA research contract awarded to General Electric. GE will also seek materials to contain the heat-collecting materials. Other studies will deal with fabrication of the best coating and insulating materials.

Reduces Landing Speed

Aiding Navy fighters to make safe landings on aircraft carriers is a new boundary layer control system. Made of Inconel-X, the system weighs only 98 lb. But the added control achieved with the system reduces by 10 knots the landing speed of the high-speed Navy fighters.

Extends Communications

Communications takes a big step forward with the "varactor" diode. This tiny device, made of gallium arsenide, will extend military, commercial and private communications with compact, long-lived systems. It also multiplies the amount of traffic that can be carried. Another advantage: enemy jamming is almost impossible.

To Boost Space Budget

The nation's civilian space agency will get $185 million more to spend next year. It will put the budget for NASA at $1.1 billion for fiscal 1962. President Eisenhower will ask for the increase in his forthcoming budget message to Congress. The new Kennedy administration is not expected to ask any revision until it has completed a thorough review of all space programs now in process.

New Word on Space Use?

President-elect Kennedy is now considering whether to follow President Eisenhower's lead in adopting a policy favoring private use of space satellites. Under present policy, the Government would assist industry to develop and launch communications satellites. Questions on international rights, patent rights and the position of industry in satellite networks will have to be answered before Kennedy makes his decision.

Needed: Basic Research

Progress in space engineering programs may be slowed unless there's greater emphasis and funds for basic research, say spokesmen for the aerospace industry. Two specific areas are magnetohydronamics and space medicine. Evidence of Russian technical papers indicates an emphasis and interest that may leave U. S. behind.

Tight Steel Takes Heat

Look for the announcement of a new synthetic mica insulation. The product is reported to be moldable to intricate shapes and close tolerances. Its thermal-expansion coefficient closely matches some grades of stainless steel. This means that the insulation could be molded around a stainless insert for the tightest possible hermetic seal. Its high operating temperature suggests its use in a variety of jobs.

Adopts "Block" Concept

The "building block" concept, familiar to equipment makers, has also been adopted by rocket-motor makers. A recently fired rocket motor was made in three separate pieces each weighing one-half ton. It opens the way for making the very large, but difficult to transport, motors needed to launch multi-million pound space vehicles and rockets.

Have Vital Stake in Space

"If the U. S. ever should be able to lay down the heavy financial burden of its weaponry insurance against war, it will make the same investment, and more, in the peaceful exploration of space." So predicts W. B. Bergen, president of the Martin Co. America's stake in space is as vital to the free world's survival as is the need for our present-day arsenal, he adds.

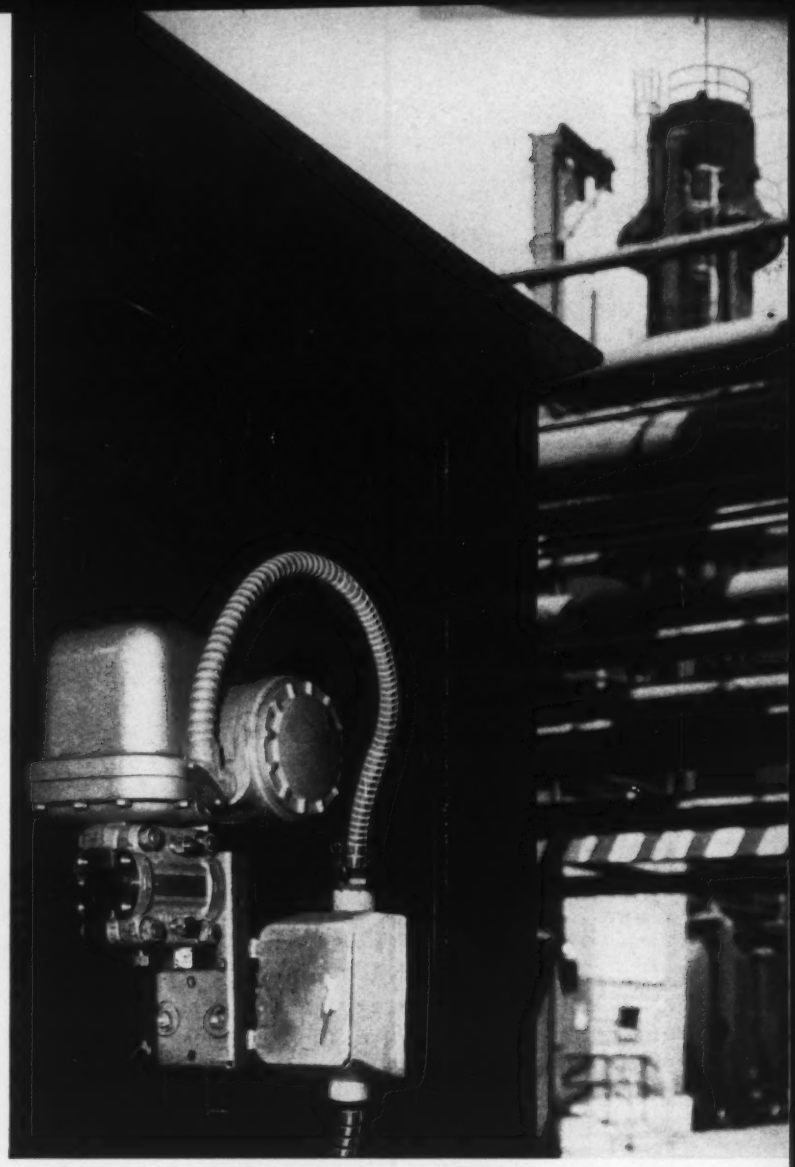
Foxboro electronics help giant steel mill "optimize" distribution of utilities

Water, gas, steam, power, oxygen — it takes all types of utilities to operate a modern steel mill. And any improvement in the efficiency of their distribution can reap a rich harvest in savings.

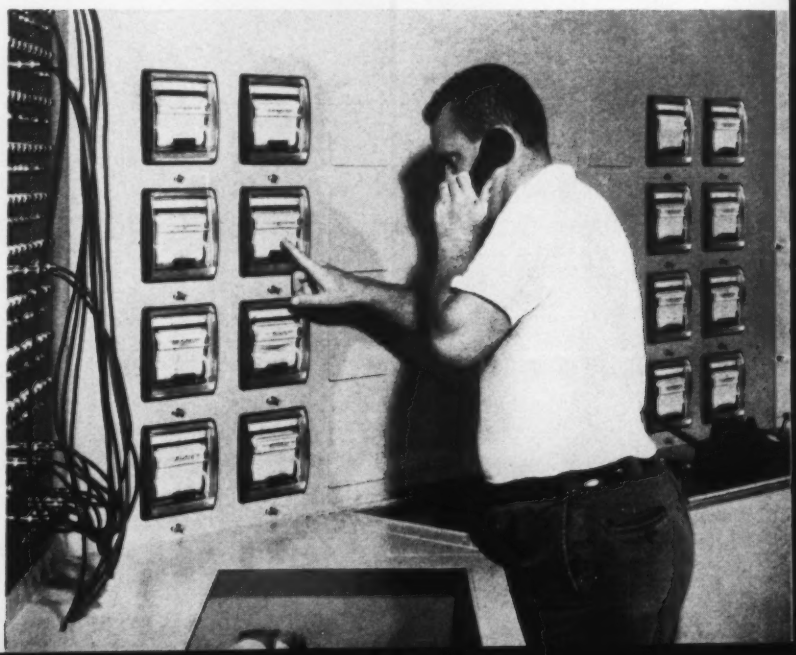
Foxboro Electronic Consotrol* instruments are helping one major producer reap just such a harvest. Dozens of Foxboro Electronic Transmitters scattered over the giant steel mill, flash pressure, level, and flow variables to a central, computer-directed, dispatching control center. As the computer figures optimum utility distribution, operators put it into effect.

Foxboro Electronic Consotrol transmitters were a natural for the system. They transmit for miles, instantaneously — over a simple pair of unshielded wires. No field power supply is required. Their 10-50 ma d-c signal serves as input for both computer and Consotrol recorders. And since components are all solid-state there is no problem of maintenance.

Foxboro Electronic Consotrol instruments cover the entire control loop. Transmitters, receivers, controllers, valve operators—everything needed for today's most advanced control techniques. Ask your Foxboro Field Engineer for complete details. Or write for Bulletin 21-10, The Foxboro Company, 801 Neponset Avenue, Foxboro, Mass. *Reg. U. S. Pat. Off.*



▲ One of 44 Foxboro Electronic transmitters flashing data to central dispatching station. Exclusive diaphragm construction prohibits transmitter from being damaged by overrange.



Foxboro Electronic Consotrol recorders at central dispatching station, are "plugged" in only when computer typewriters show an upset. Switchboard allows 16 recorders to cover 44 different transmitting stations. ▶

FOXBORO

REG. U.S. PAT. OFF.

Glass Helps Metals to Raise High-Temperature Barriers

Interested in extending the useful range of low-melting-point metals?

Studies show that adding glass greatly increases the high-temperature strength of aluminum, lead and zinc alloys.

▪ Unique engineering materials result when two materials of widely varying properties are combined.

Adding to the growing interest in these tailor-made materials is one of the newest of the line—glass-metal composites. Now, the useful temperature range of many of the low-melting-point metals can be extended several hundred degrees.

Take Your Pick—There are other types of composites. Cermets and SAP materials are members of one group. Another composite type is of filaments in a matrix. An example is Fiberglas (Owens-Corning trademark) in plastic. Flake materials in a matrix—such as graphite flakes in bronze—is another group. Laminate sections make up a fourth well-known group.

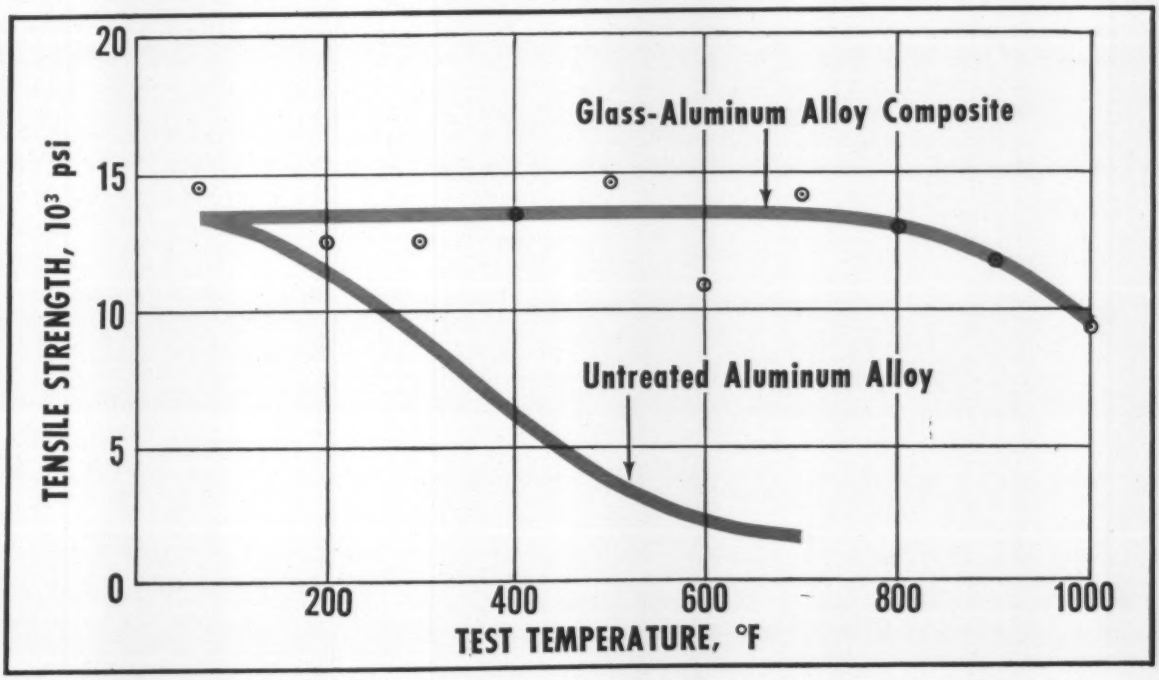
Glass-metal composites feature a number of key properties. Included are: improved strengths—even at high temperatures; higher moduli of elasticity; better stress rupture and creep properties.

In terms of strength to weight ratio, some aluminum-glass composites compare favorably with stainless steels and titanium up to 800°F. Obvious uses, therefore, are for those applications needing long-term structural properties. Supersonic planes and engine blocks are examples.

Combines Properties — How about a composite of glass and lead? Teamed up in this material are those properties of lead and glass ideal for chemical-tank construction and radioactive shielding.

In general, glass composites could extend the useful temperature range of metals such as aluminum,

Glass-Metal Team Resists Heat



KEEPS STRENGTH: Adding 20 pct (by vol.) glass to type 1100 aluminum alloy gives strength to 800°F.

magnesium, tin, bismuth, zinc and lead.

They can also replace glass-reinforced plastics in those jobs where long-term temperature needs would limit the plastics use.

Gave the Clue — The successful program to strengthen plastics with fibrous-glass materials was the clue. It led Owens-Corning to study how materials other than plastics — metals, for example—are influenced by glass. The Navy Bureau of Weapons sponsored a large portion of this research.

How are glass-metal composites produced? There are several techniques. One method is by casting with a vacuum assist. It's also known as the atmospheric-force casting system.

This method consists of placing the glass fibers in a mold with two openings. One opening connects to a vacuum system; the other is submerged in molten metal.

Forces Liquid Metal — Atmospheric differential forces liquid metal through the small openings between the glass filiments and fills the mold.

The diecasting system for making these composites uses the same principle. However, pressure on the liquid metal is induced mechanically. The upper opening is needed only to allow air to escape from the mold.

Another method for mechanically forcing the liquid metal around fibrous glass is centrifugal casting. Puddling systems and hot-pressing of metal-coated fibers are other techniques for making these composites.

Study Fiber Makeup—Many variables must be studied in such techniques. Some of the most important are: glass-fiber composition; fiber length, diameter and orientation; coating-alloy and matrix-alloy compositions; and ratio of glass to metal.

Other factors to be considered include subsequent heat treatments of the casting, and other forming processes such as rolling, forging, and extrusion.

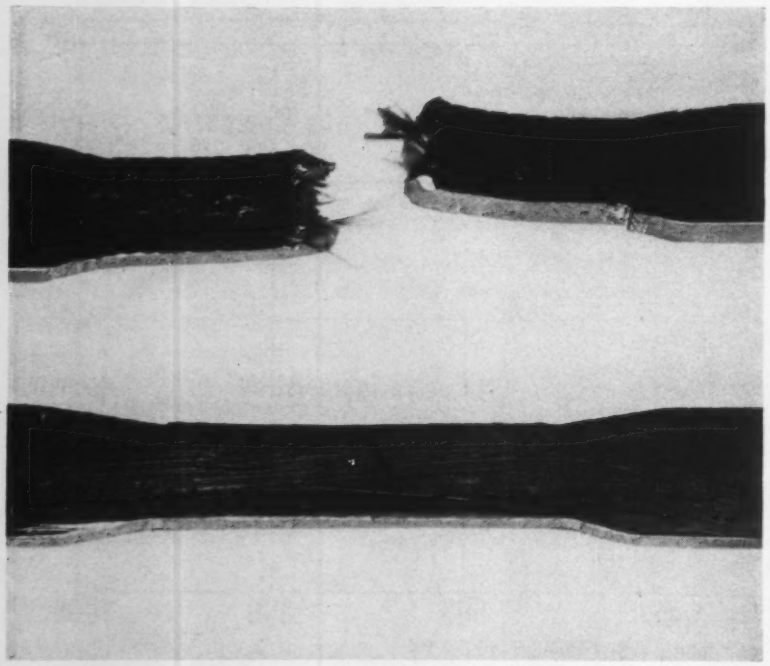
The first table compares the strength of lead composites with different percentages and orientations of glass fibers. It shows that glass additions increase the tensile strength. Orienting the glass fibers also contributes to increased strengths.

Try This Test—A dramatic ex-

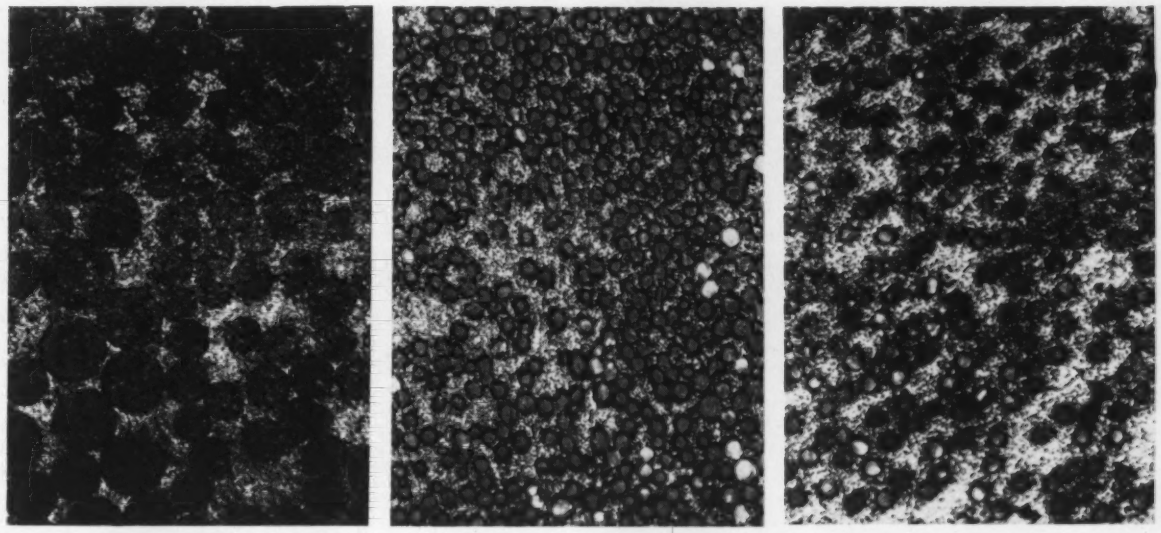
Check Lead's New Properties

	Lead, unreinforced	Lead with 1–5 pct glass* (random oriented)	Lead with 1–5 pct glass* (oriented two directions)	Lead with 7½–20 pct glass* (oriented one direction)	Lead with 30–50 pct glass* (oriented one direction)
Tensile strength, psi	3,000	2,500	6,000	15,000	20,000
Modulus, (10^6 psi)	1.5	2	—	6	—
Elongation, pct	40–50	0–1	0–1	0–5	0–1
Compressive strength, psi	600	6,000	—	—	—

* By volume



EXPOSES GLASS: Fibers of glass are exposed after fracture test on lead composite. Adding 1-5 pct glass doubles lead's tensile strength.



HOW TO MAKE COMPOSITES: From left: aluminum cast around bare glass fibers (50X); aluminum-coated glass fibers compacted by pressure (150X); aluminum cast over aluminum-coated fibers (150X).

periment points up the effect of glass fibers and flakes on metals. Suppose a bath of molten lead is superheated 150°F above its melting point. Then, 5 pct by volume of glass flakes are stirred into the bath. Result: It's now impossible to pour out the lead. Yet, temperature has not decreased.

If the chunks are not allowed to cool, is it possible to squeeze molten lead out of them? It's possible but difficult. The large surface area of the glass has an apparent viscosity too high for the lead to overcome. It takes a force greater than gravity.

The force needed to overcome flow resistance through the glass could be greatly reduced by precoating it with metal. This eliminates the negative wetting angle between glass and metal during casting.

Hot - Pressing Helps — Metal - coated glass filaments can also be hot pressed to produce composites having very high amounts of glass. The technique calls for placing the metal-coated fibers in a die heated to about 0.8 of the metal's melting point. Next, the die is pressed. Pressures are 5-50 tons per sq in. — depending on the metal used.

Composite strength, as a function of pressure and time rises to a maximum. It then decreases with more pressure or time due to excessive fiber breakage.

Ignores Temperature—Of greater import is the relationship between mechanical properties and temperature of these composites. Tests indicate that adding glass fibers makes metals more independent of temperature.

The graph shows that the tensile strength of Type 1100 aluminum alloy with 20 pct by volume of glass added remains fairly constant up to 800°F. Strengths of the untreated alloy, however, fall off rather rapidly with increasing temperature.

Compression, r i g i d i t y , stress rupture and creep properties of low-melting point metals are also improved by converting them to glass-metal composites. The one disadvantage of the process is reduced ductility which makes subsequent forming difficult.

How Does Glass Help?—Several theories have been offered for the improved strengths of the composites.

One is that the glass fibers simply reinforce the metal. Another is based on oxide-dispersion strengthening. A third suggests that the fibrous glass controls grain size and orientation.

Not one of these theories is influential at all times. Findings reveal that each operates under a certain set of conditions.

Tests Other Metals—Most of the test work at Owens-Corning has been with metals with melting points below 1300°F. Examples are aluminum, lead and zinc. Can properties of higher-melting-point metals be improved also?

Tests made on stainless steel composites were not successful. The reason: poor wetting of the metal to the glass and the low ratio of modulus of elasticity between glass fibers and stainless steel.

Other tests are being run on other oxidation and heat-resistant materials.

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Fast Spin In Cob-Meal Mixture Removes Machining Marks

Spin finishing has replaced costly hand buffing for odd-shaped automotive parts.

By spinning parts through a dry, granular compound, this setup polishes complex shapes.

▪ A new ball-joint suspension created a ticklish problem at General Motors Corp., Saginaw, Mich. The new design consists of a plastic socket that mates with a ball stud made of steel.

This design calls for tight quality controls. In fact, no directional-finishing lines can be tolerated on these ball studs.

Prior to the design changeover, each ball stud was superfinished to a 10-microinch rms finish. But this wasn't good enough for the new ball joints.

When GM engineers found the finish wasn't satisfactory, they asked themselves a big question: How can you improve a production process that involves more than a million parts per year? With a little ingenuity they came up with the answer.

Spin-Finishing Process — Their answer centers on a hybrid process. It's a cross between automatic power buffing and tumbling.

Actually this method of spin finishing odd-shaped parts was developed to eliminate hand buffing prior to automatic plating. It's used to make decorative hardware for the automotive, building, appliance and plumbing fields.

In essence, each processing unit simply power spins parts through a dry, granular compound. This action is much faster and more positive than tumbling. Thus, it can be used to finish complex shapes that might be damaged by tumbling.

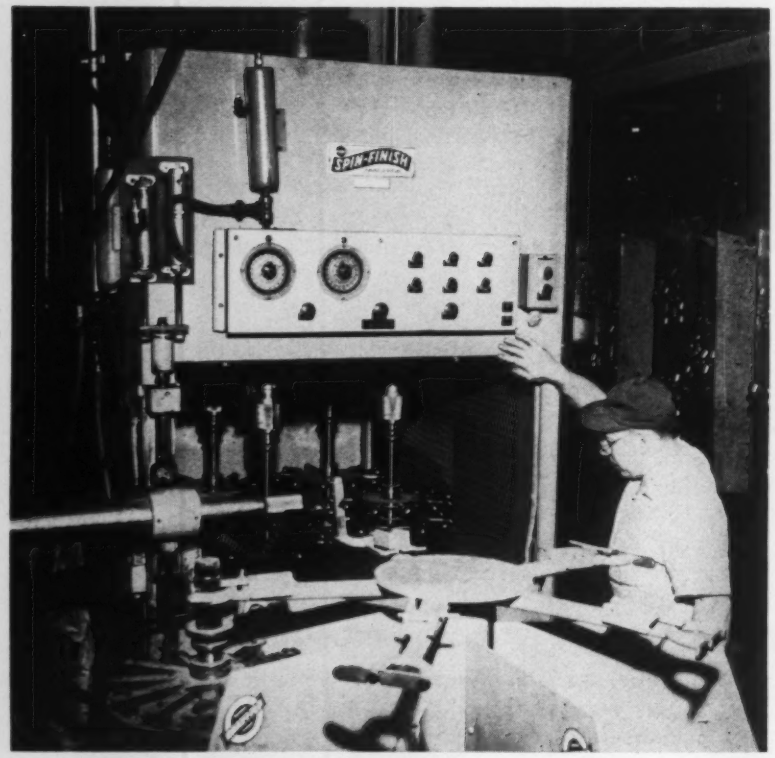
Fast Setups—Each machine consists of a round tub with a power-driven head. The head on each unit supports four spindles. Quick-acting chucks secure the holding fixtures to the spindles. Fixtured parts are submerged and spun through a granular cob-meal compound inside the machine's tub.

The unit cycles automatically. Then the operator takes the holding fixtures out of the machine with a mechanical, air-operated, telescoping arm. This arm is attached to a post on the machine.

During the processing cycle, the operator loads four fixtures with ball studs. This keeps nonproductive cycle time to a minimum.

Work Holding Developed—A five-station fixture-holding table is used with the machine and the loading arm. It helps the operator rack and unrack parts. This table also controls the movement of fixtures in and out of the machine.

To speed the loading and unloading of parts in the fixtures, GM engineers are now developing special holding chucks for the ball studs. All the operator will need to do is push a part into each of the chucks. Since parts and fixtures are submerged in the machine's tub during cycling, there's no chance of operator injury if a part comes loose during the spinning stage.



LOADING UP: Mechanical loading arm positions four fixtures inside a spin-finishing machine. Each fixture holds 48 studs for automobile-suspension systems. The entire processing cycle takes eight minutes.

High Production—Several compounds were tried before the cob-meal mixture was found best. It refines the finish while removing all directional furrows. Tests prove that the resulting microfinish is better than when parts were buffed.

Forty-eight ball joints are loaded on each fixture. Thus, the four fixtures hold 192 parts.

The entire processing cycle takes eight minutes. First, the spindles revolve clockwise for four minutes; they then reverse for the remainder of the cycle. Gross output exceeds a thousand parts per hour.

Medium Is Important—By making additions to the compound at regular intervals, the operator holds the optimum working level. This gives consistent results throughout the shift-like operation. It also prevents variations in finish. The latter is an important factor in quality and reliability of the product design.

A water jacket surrounds the entire tub to keep the compound cool. Also, a positive-displacement pump forces air through the compound.

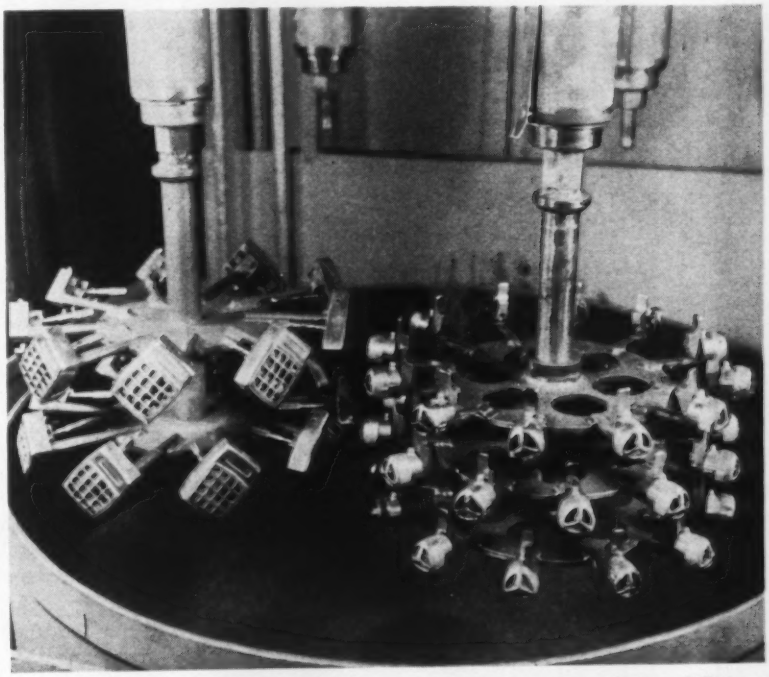
Handles Range of Parts—This power-spin process was developed to finish the surface of unusual parts prior to plating. Adapting the process to the superfinishing of mechanical parts is a special application.

Metal parts up to 12 in. long are handled by the finishing machines. However, the shape of a part must induce good abrasive flow. Deep depressions with square corners can't be finished because they retard or stop abrasive flow.

Various abrasives and lubricants can be used with the cob meal to obtain the precise finish desired. Of course, all parts have to be strong enough to withstand the feed pressure through the medium. Special fixtures and adapters prevent damage to delicate parts.

It's even possible to process different types of parts in the same working cycle. The operator can load different parts on each of the four holding fixtures. Thus, each machine finishes a four-fold product mix of 192 parts in eight minutes.

EASILY CHUCKED: While the machine automatically refines the surface finish of 192 studs, the operator loads four additional fixtures.



READY FOR DUNKING: Another setup shows some of the different parts which can be finished by spinning through a granular mixture.

Efficient Monorail System Absorbs Finishing Line

By **J. K. Harlow**—Senior Engineer, Western Electric Co., Inc., Columbus Works.

Automation is the byword in a plant that sends parts through processing without ever leaving the monorail system.

Plating quality is up and manual handling is down.

■ A newly-designed straight-line finishing system has recently been installed in the Columbus, O., plant of Western Electric Co., Inc., for zinc plating telephone equipment. The system affords quality plating through a minimum of manual handling.

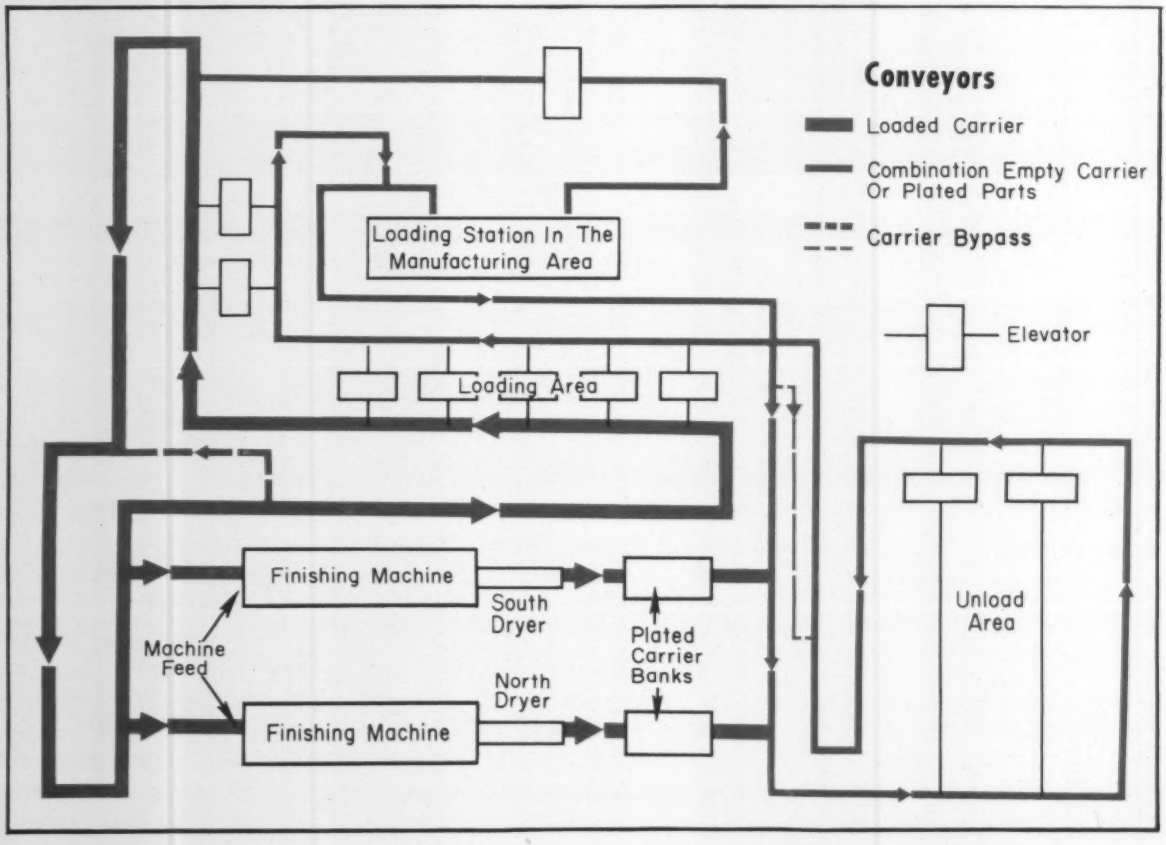
The plating machines are supplied with carriers by a power-and-free conveyor system. Other refinements include chemical recovery, and drops in both waste to be treated and water usage.

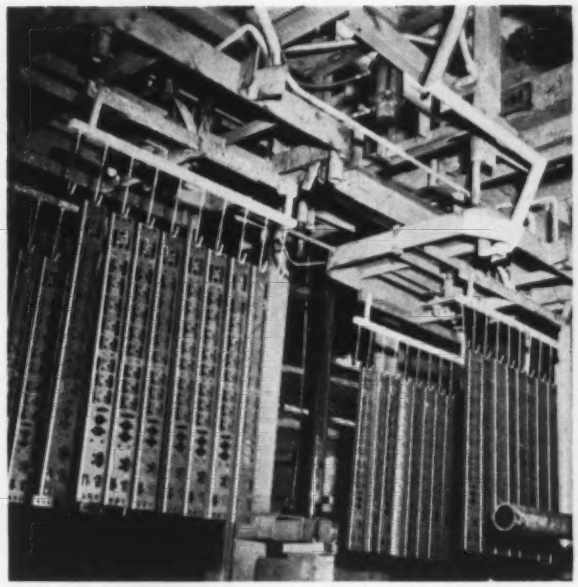
The system does away with transfer by hand of racks from bench to conveyor, conveyor to bench and transfer of racks from the conveyor to the machine and back. Carriers stay in motion even during lunch breaks. As a result, the machines are running 8½ hours on a single shift.

Parts Stay Put—As parts come into the area, they are mounted on a power-and-free trolley. Parts stay on the trolley right through final finishing. They aren't taken off until they're ready for delivery.

A special zinc-plating machine had to be designed that would fit

New System Speeds Finishing Cycle





TIME FOR PLATING: Once inside the plating machine, parts pass through 31 metalfinishing steps.

RACKING STATION: Parts are placed on racks by hand. From then on, all operations are automated.

into the scheme of the existing monorail system. The machine was built by Hanson-Van Winkle-Munning Co., Matawan, N. J. The main monorail system was designed by Jervis B. Webb Co., Detroit.

Now in operation, the new machine simply lifts work-loaded trolleys off the plant monorail and sends them through 31 metalfinishing stations. As soon as these steps are completed, the machine sets the trolleys back on the main system.

Costly Alternative—A conventional setup would have required two oval-shaped return-type machines, two chain conveyors, small racks, rack trucks and storage racks. Also, racks would have to be transferred by hand at the racking and machine positions.

The difference between the two systems is efficiency. Now racks can move to the plating tanks in much less time, and transfers can be made with far fewer complex devices. Since the new system can handle larger size racks, there are fewer transfers per hour.

The reason that the machines can operate during break periods is quite simple. The whole conveyor system is so designed that it permits buildup of carriers before and after plating. Rack maintenance is greatly reduced, since the racks themselves remain on the carriers. This also reduces racking time. Also, all types of racks can run at once.

The 3-in. conveyor system handles the plating racks. You can mount two racks on a carrier. Each carrier consists of a 30-in. long and 27-in. wide bumper equipped with double-free trolleys. It also contains a variable two-position selector which can be set automatically. This device designates whether the carrier holds loaded or empty racks.

Ten Stations—Of the ten stations, seven are for racking, two for unracking and the other is a combination of the other two. Each station is equipped with an air-operated lift, except the combination station which has both raising and lowering lifts.

There's room for two carriers at one time on the track leading into the main conveyors. The lift will not run again until one of these carriers has cleared.

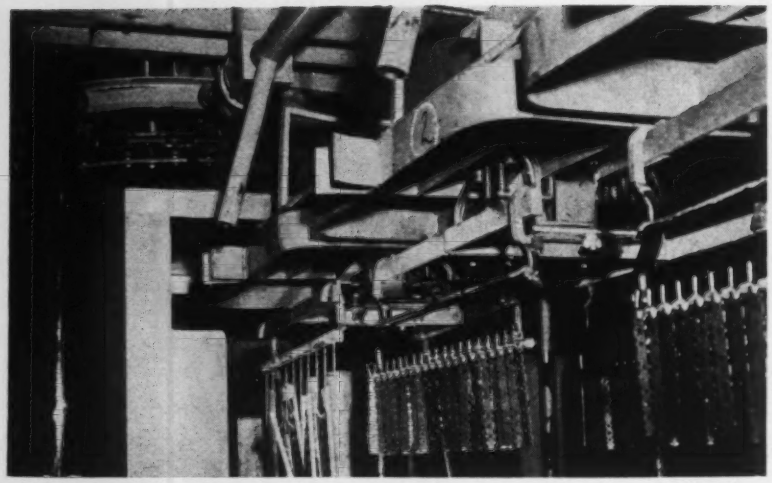
The first section of the mammoth system contains 1100 ft of track. This portion is used by both loaded and empty carriers. This same network includes carrier bypasses along with racking and unracking stations.

Long Track — Parts that are ready to be plated travel along another track, 760 ft in length. A third 360-ft long track picks up parts from the manufacturing area. It can also switch carriers back and forth between the two aforementioned tracks.

In addition, there are two 50-ft long conveyors for the dryers of the two platers. The supply conveyor for the plating machines is 140 ft in length. Plated parts are banked along a 200-ft section. Both plating machines are 84 ft long, while the dryers are 36 ft in length.

What exactly happens to a carrier as it passes through the system? As soon as it is loaded with unplated parts, an operator pulls a chain, releasing a stop. The carrier then rolls along a track onto an elevator. Here it's raised 7 ft and fed onto the approach track. Then it switches onto the 760-ft track and moves at 36 fpm.

Number's Up—If the selector on the plating machine is set for this carrier number, a switch will trigger the carrier into the machine. If the carrier is not selected, it follows



DRYING THE PARTS: Carriers are indexed into the dryer in the "up" position. Stabilizing bars maintain the position of the carrier.

a short bypass that brings it around the plating entrance again.

There's only room for four carriers at one time in front of each machine. This might cause some delay in a carrier's number "coming up."

The plating track lowers into position for the carriers to pass over a multi-station electrolytic, anodic cleaner tank. After cleaning, the carrier is raised, and is then lowered into a rinse tank. Other tanks with "down position" track include acid etch and zinc plating.

High Position—The "high-low" track holds carriers for anodic smut removal, the rinse after each chemical step, the four counter-current rinses after plating, the passivating solution and the three counter-current rinses after passivating. The carrier then moves forward into each tank and the dryer in the "up position."

The machine has a preset transfer time of 32 seconds and a dwell time of 13 seconds. Both of these times are adjustable. Parts are then moved onto another track which whisks them through the steam-heated hot air dryer. Speed here is four feet per minute.

Now that the parts have been plated and dried, the carrier moves onto the 1100-ft track. It proceeds at a rate of 36 fpm to a remote point where it's switched into unracking position. When unracked, the carrier is elevated and returns to its racking station on the same 1100-ft conveyor.

Typical Parts—At present, the system is used to plate such parts as mounting plates, frame assemblies, cores and armatures. Carriers can handle 18 mounting plates at one time. These parts are up to 36 in. long. The smaller armatures can be racked at 504 to a single carrier.

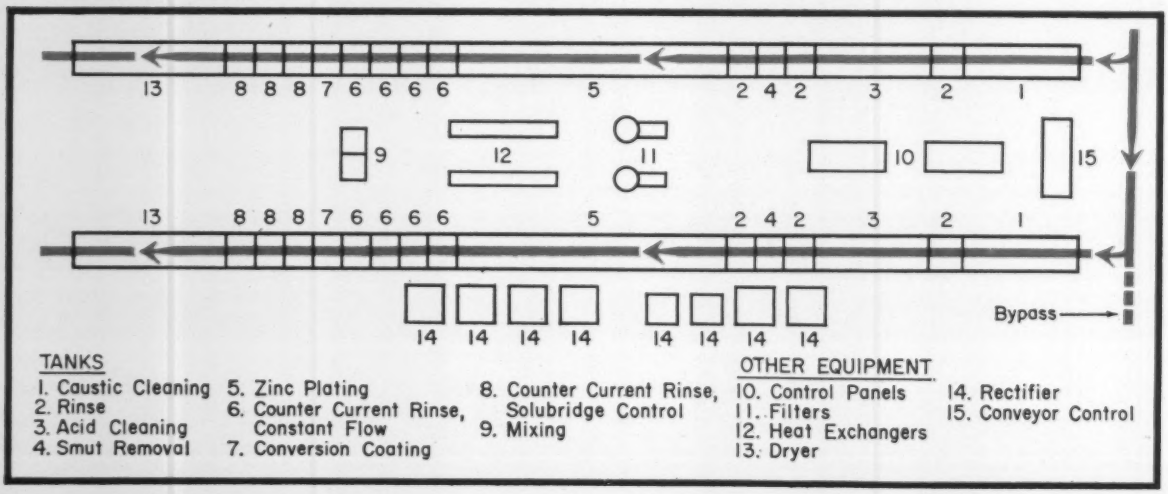
About 25 large running production parts and another 100 low-running parts are being processed by the system.

The rinse tanks that follow the cleaning tanks are of the dip and spray type. They drain the waste to the treatment plant.

Recovered Rinse — The rinse water is pumped to a plating solution recovery system. A double effect evaporator recovers the solution, concentrating it to 26 oz per gal. Evaporated water is condensed and then fed back through the flow regulator for re-use.

The three-stage counter-current passivate rinse uses deionized water. A solution bridge regulates this water. It all adds up to proper control of salt concentration in the last tank.

Parts Enter Plating Phase Automatically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Bypass
TANKS
1. Caustic Cleaning
2. Rinse
3. Acid Cleaning
4. Smut Removal
5. Zinc Plating
6. Counter Current Rinse, Constant Flow
7. Conversion Coating
8. Counter Current Rinse, Solubridge Control
9. Mixing
OTHER EQUIPMENT
10. Control Panels
11. Filters
12. Heat Exchangers
13. Dryer
14. Rectifier
15. Conveyor Control

Broaches Yield Tight Finishes

With a straight-line push of 4700 lb, strip broaches finish connecting-rod holes to tolerances of ±0.0007 in.

Output from a six-station machine is 500 rods per hour.

■ Combining strip broaching with drilling and chamfering, a new machine turns out low-cost connecting rods. The newcomer, made by The Cross Co., Detroit, employs strip broaching in lieu of reaming for wrist-pin bushing-assembly holes.

Strip broaching boosts quality while maintaining consistent results. The broaches stay sharp longer than reamers. Thus, they insure a better finish with less tool maintenance.

Bushing Seats—There's another bonus worth noting. Longitudinal tool marks, left by each broach, provide seats for the wrist-pin bushings.

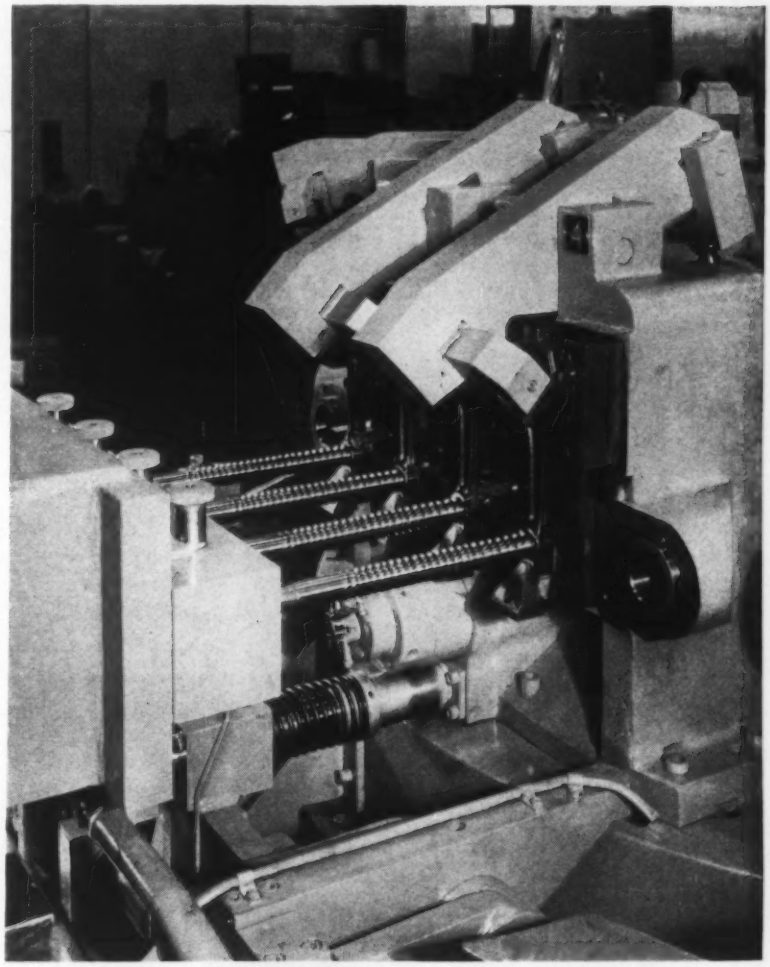
At 80 pct efficiency, the six-station dial-type machine produces more than 500 connecting rods per hour. The hardness of these forged-steel rods ranges between 197-241 Bhn. Hole tolerances are held to within ±0.0007 in.

The operator loads four connecting rods in a fixture. Then he actuates the hydraulic-clamping device. As a safety feature, the clamps close automatically if the operator overlooks them. There are six sets of fixtures on the 60-in. diam table.

At the second station, the machine drills the wrist-pin holes to half depth. Then a smaller drill completes the undersized holes at the third station.

Ready to Broach—With most of the stock removed, core drilling takes place at the next station. These core drills leave only enough stock for broaching.

The fifth station consists of automatic-recessing tool holders and formed bits which chamfer both sides of the drilled holes at the same time.



KEEPING COOL: Coolant connection is established at the start of the broaching stroke. It's maintained until the broaches are withdrawn.

Broaches push into the holes at the last station. A pilot centers each broach as it enters an undersized hole.

As the broaches push forward at 30 fpm, roughing and finishing teeth take their cuts. Two ball burnishers follow the finishing teeth. These burnishers remove 0.0003 in. of stock.

Eliminates Drag—A rear pilot guides the ball burnishers into the holes. It also prevents the broaches from dropping as they start their withdrawal. In addition to final finishing, the burnishers enlarge each hole. This eliminates drag on the cutting teeth during withdrawal.

Full broaching stroke equals 18 in. During the entire stroke a force of 4700 lb is exerted on the broaches. To obtain a direct line of force from the hydraulic-feed cylinder to the broaching head, the cylinder is mounted on top of the slide.

As the head feeds forward, a dog on the slide trips gravity-operated cam clamps. During broaching, these clamps secure the dial table.

Giant Press Lifts Size Limits Of Closed Die Forgings

Heretofore, the size of closed-die forgings was limited by press capacity.

Now, a new massive forging press breaks this stalemate.

■ Taking up the challenge of the space-atomic age is a giant new forging press—a 20,000 ton capacity unit.

Built on the spot at the Cameron Iron Works, Inc., Houston, the total weight of the press is over 3,000,000 lb. With concrete foundations, the overall weight tops 4,000,000 lb.

Compared to other forging presses, this is the largest privately-owned, closed-die forging press, claims the Houston company. The Air Force owns two forges which are larger, admits a Cameron spokesman. But these are used mostly for lightweight alloys.

Gets Into High Gear — An equally noteworthy aspect of this development is the manner in which it was carried out. This giant among forges was completed less than six months after the go-ahead was given. It's a classic example of several companies cooperating in a crash program.

Construction started with no completed drawings or design—only a wooden model. Brown & Root, Inc., Houston, took on the job of erecting the building, foundations, and plant press. Bethlehem Steel Co. was contracted for the forgings to be made into platens and other parts. Wyatt Industries, Inc., Houston, was given the fabrication job.

"All played a big part in meeting the deadline," said vice-president and general manager, Herbert Allen.

Closely working with Mr. Allen was Mr. J. W. Brougher, vice-president and manager of the special products division. It was Mr. Brougher's need for a critical-size forging that prompted the sudden move to build the massive press.

Widens the Scope—The significance of the new Cameron press is that it widens the scope for forging. "It makes possible and practical the forging of such products as jet engine parts, turbine cases, shafts, landing gears, and atomic-power-plant parts. Sizes, lengths, and shapes heretofore thought impossible, can now be forged."

The first job, for example, was an aircraft shaft weighing 6000 lb. Material: A-286 alloy. The shaft is 12½ ft long. Shaped like a funnel, the large end is about 3 ft diam; the shaft end is 12 in. diam. An 8-in. hole runs axially through the shaft.

In addition to high-temperature stainless steels, the new forge can handle molybdenum, tantalum, tungsten, columbium, and other exotic alloys.

Its huge capacity in both tonnage and size makes it possible to extend the closed-die forging technique and its attendant benefits.

Flash is Result—As a Cameron

INTRICATE SHAPES: Preheating die is part of technique to produce ultralarge, intricate-shaped forgings of steels and refractory alloys.

spokesman points out, there are basically two ways in which to cause metal to fill a die. The almost universal practice calls for closing a die on an excess of metal. When closed, the cavities are completely filled. Surplus escapes in the form of a flash.

Cameron's closed-die technique differs. It totally encloses the hot billet within the main dies. The movement of the multiple rams flows and works the metal under high internal pressures.

Results: high physical properties; uniformity—that is, little or no difference between transverse and longitudinal properties. The absence of flash also eliminates the notch effect attributed to flash lines.

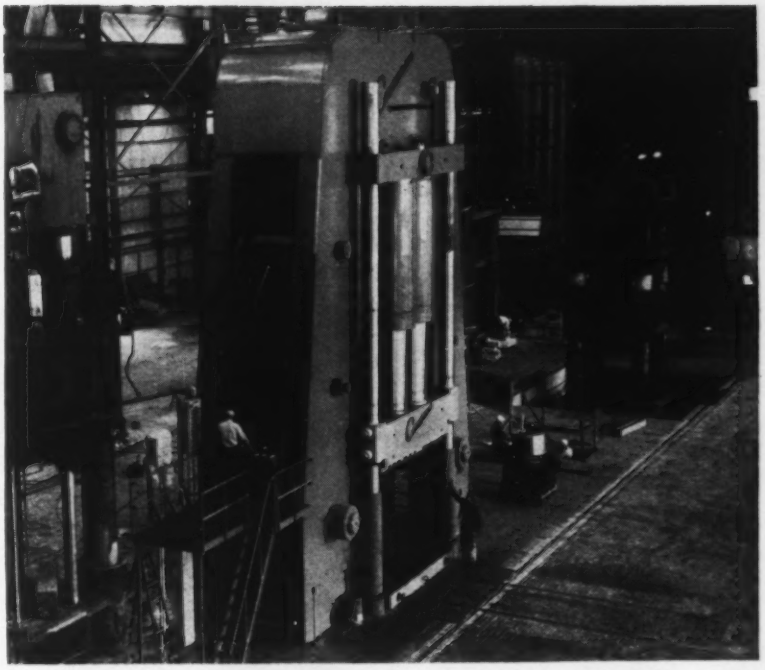
It takes only one heat to complete a forging. Grain refinement is uniform throughout. This allows heat treatment to fully develop the metal's capabilities.

Makes Extrusions Also—The new press also permits Cameron to make extrusions vertically through the press.

The frame of the press is 50 ft from top to bottom and 31 ft across the bottom. When desired, the operator drops the main piercing ram assembly out of the press. This leaves a hole in which an extrusion up to 30 ft long and 56 in. diam can be produced. It's doubtful, claims the Houston company, if any other press in the world makes extrusions of this length and size.

Split-die techniques can also be used with the new press. This means that ultralarge forgings of intricate shapes and sizes can be made. Vital to these operations is the new throttling control. It permits the press to be operated at any speed from 0-400 fpm.

Supporting the new massive forge are two other major presses. These are a 4000 ton blocking and forming press and a 6000 ton shaping and punching press. In addition, plans call for adequate heating and handling equipment to be installed at a near date.



TITAN OF FORGES: New 20,000-ton forge is surrounded by supporting presses and equipment. Operator, at control panel, points up press size.

EXTRUDES SHAFT: Dies open after hollow-shaft was made by extruding up through moving platen. Parts, 36 ft x 56 in. diam, can be made.

Welded Titanium Tubing Curbs Corrosive Attack of Acids

Titanium's corrosion resistance suggests its use in process industries. But, it must be welded with care.

One ingenious device provides economical, yet ample, gas protection while welding long tubes.

▪ Mass-produced titanium equipment—45 heat exchangers—is going into service in two large chemical plants. It represents the broadest use for titanium metal recorded by the U. S. process industry.

Delivery of 13 heat exchangers has been completed. Thirty-two more are now in production at Saffran Engineering Co., St. Clair Shores, Mich.

Must Withstand Acid—The equipment will be used in a sulfuric acid-metallic sulfate environment in two plants operated by the National Lead Co.

In choosing titanium, project engineers studied the performance of metals previously used in the coil-type heat exchanger. These units were made from 2-in. tubing, weighed 1300 lb, and cost about $1000 each. They last until a sulfate buildup becomes intolerable. Time: usually about nine months.

Titanium's corrosion resistance is excellent. Its raw costs were of little concern. Tubing prices were comparable to other metals competing for the job.

High Welding Costs?—The major questions concerned fabrication costs. These are a major investment in any manufactured item and a factor that has curbed many titanium applications.

The job called for 120 linear feet of 2-in. diam tubing coiled into ten convolutions. Legs, spacers and risers were to be welded into position. Engineers at Titanium Metals Corp. of America recommended welded tubing in place of the more costly seamless product.

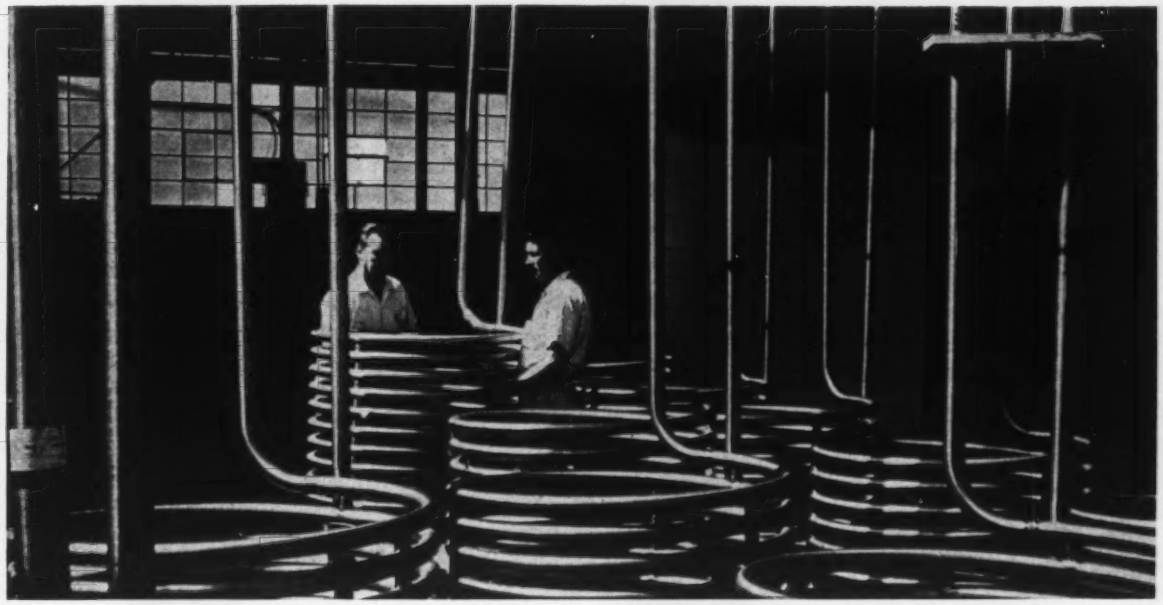
The coils would be Saffran's first titanium job for the process industry. However, the firm had prior titanium experience in welding inlet-guide supports for the General Electric J-93 engine.

Modifies Gun—Saffran estimates that about 65 manhr would be required per coil. The technique calls for use of a Saffran-modified welding gun to eliminate the cumbersome trailing shield. Also needed is a method to give inert-gas protection.

Helium or argon is required in titanium welding to prevent the metal from picking up atmospheric oxygen and nitrogen. Presence of these gases in amounts as little as 0.5 pct embrittles a titanium weld beyond the point of usefulness.

A simple adaptation of a stan-

PROTECTS WELD: Assembly doubles as wind baffle and purge chamber. Argon enters via welding gun and clamp-shaped unit in center of device.



GIVES LONG LIFE, TOO: Titanium heat exchanger, weighing 74 lb replaces unit weighing 1300 lb.

dard Heliarc welding gun allows Saffran to do without trailing shields. The modification is a simple cannister packed with copper turnings taped around the head of the welding gun. The turnings diffuse argon, fed into this cannister, over the weld zone.

Needs Backup Gas—One problem has often vexed fabricators of titanium. It is to supply enough backup protection to the underside of welds when long lengths of tubing are being joined. The difficulty: keeping proper argon pressures while economizing on the gas.

Saffran solves this problem by attaching a bronze diffuser to a threaded section of ½-in. diam steel piping. A series of gaskets, set about 18 in. back of the business end of the diffuser prevents argon from seeping away from the weld zone. A brass gasket, fitted into the opposite end of the tubing, serves as a gas bleeder. Thus, argon concentrates in the heat-affected zone of the metal—where such protection is needed.

In welding tube lengths, Saffran first tack welds the two sections into position. A cannister is then jigged into position around the sections to be welded. It serves both as a wind baffle and a collecting chamber for the argon.

Overall Protection—In welding spacers into position, Saffran proceeds from the bottom to the top of the coil. Argon feeds throughout the coils to provide backup protection. Argon also feeds into the spacer.

Instead of 1300 lb, the new coil weighs only 74 lbs. And it's expected to last indefinitely. The break-even point on the investment is calculated to be 1.3 years.

MODIFIES GUN: Version of welding gun has cannister packed with copper turnings to diffuse gas. Device eliminates need for bulky trailing shield.

Unit Couples Heat Treating Steps

Triple-Threat Hardening Machine Boosts Production, Pares Costs

There's no need to use a series of separate units for heat treating. One machine can combine all steps—heat, quench, temper—in a continuous operation.

Other highlights include: greater output; lower overhead.

■ A number of factors enter into the making of quality parts. The right steel, careful forming, finishing and inspection techniques are of utmost importance. But proper heat treating still remains the key.

For example, only by heat treating hammer heads uniformly to the desired hardness pattern can durable and even-wearing striking faces be consistently produced.

Reproducibility can be achieved with an automated heat-treat unit such as that designed and built by the Selas Corp. of America, Dresher, Pa. It combines heating, quenching and tempering in a single, simple, continuous unit.

Steps Were Prolonged—Previous heat-treat practice at the Warren Tool Works, Warren, O., called for heating forged sledge-hammer heads in a rotary-hearth furnace to 1480°F. After soaking, they were locally quenched in cold water and then tempered.

Tempering consisted of heating a large load of sledges to 650°F in a draw furnace. Soaking gave the desired face hardness of Rc 46-51. The entire hardening and facing process took at least two hours. Production averaged 45-65 pieces per hour.

Boosts Output — Compare this with the 125 pieces per hour obtained with the Selas unit at the Warren Tool Works. As a part progresses in steps through the machine, it passes between opposed-firing burners in the heating section into a water-quench station. Then, it passes between opposed-firing burners in the tempering section before automatic discharge at the end of the conveyor.

The entire operation of heating, quenching, tempering, and automatic discharge takes only 12 minutes for the 20-lb heads and as little as 6½ minutes for the 4-lb size.

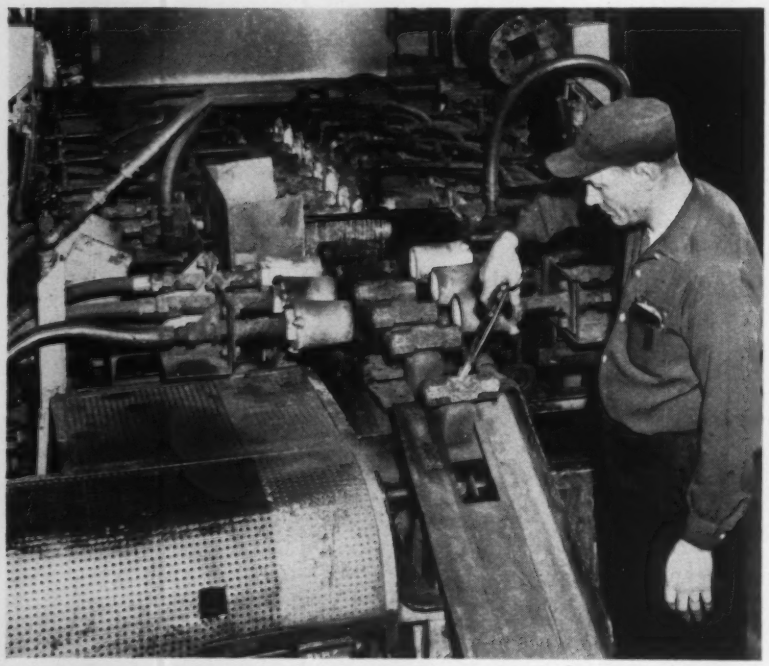
Tests have established the required cycle times for heat treating the various sizes. At start-up, setting the dial of the machine's automatic timer obtains the desired cycle.

Unit Is Versatile—While this heat, quench, and temper line was designed mainly to heat simultaneously both faces of double-faced sledge hammers, a manual cut-off valve permits operation of only one row of burners. Thus, it can process single-faced striking tools—such as a woodchopper's maul—with equal efficiency.

Start-up involves no more than lighting the burners at the beginning of the shift. In ten minutes, the machine is ready to go at full speed.

Savings realized through the use of the Selas unit have been numerous, according to R. W. McIntyre, works manager at the Warren plant. Handling costs have been cut. Inventory in process has been reduced.

Direct labor costs are now about half. The Selas unit is integrated with a previous facing step. The facing-machine operator simply feeds work to the materials handling conveyor. From that point, the heat-treat machine takes over.



SAMPLING IS EASY: Operator pulls test sample at discharge end of machine. Note arrangement of burners close to hammers' striking faces.

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Acme-Newport offers you the answer to imbalance in steel inventory. Mark your order for *Red Circle Service* and it catches the attentive eye of every mill man from our order desk to the shipping department. Every rush order bears the bright *Red Circle* that gives it preferential treatment all along the line. Same high quality; same modern facilities; same skillful handling; same unhurried series of laboratory checks . . . *plus* our flexibility of operation and scheduling, and extra effort to get you off the shortage hook! When you need it good and you need it fast, give Acme-Newport a call!

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Hot Rolled Pickled Steel in Coil
Hot Rolled Sheets
Hot Rolled Pickled Sheets
Cold Rolled Steel in Coil (*full hard only*)
Cold Rolled Sheets
Alloy Sheets and Plates
Plates ($\frac{3}{16}$" *and lighter*)
Electrical Sheets
Electric Weld Line Pipe
Spiral Welded Pipe

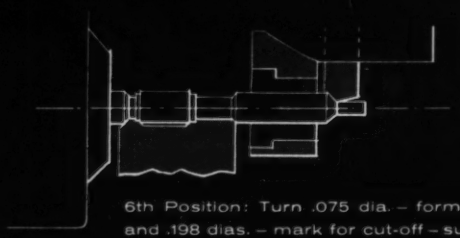
Steel

Acme-Newport Steel COMPANY
NEWPORT, KENTUCKY
A SUBSIDIARY OF ACME STEEL COMPANY

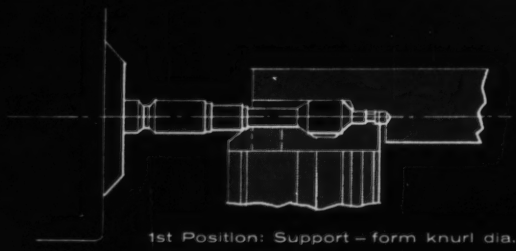
Acme-Gridley Speed & Accuracy...

SLASHES TOTAL MACHINE TIME 76.4%

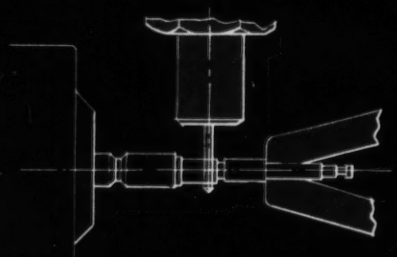
for E.F. Johnson Company



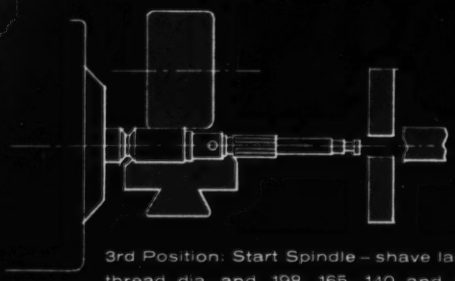
6th Position: Turn .075 dia. – form .165 and .198 dias. – mark for cut-off – support



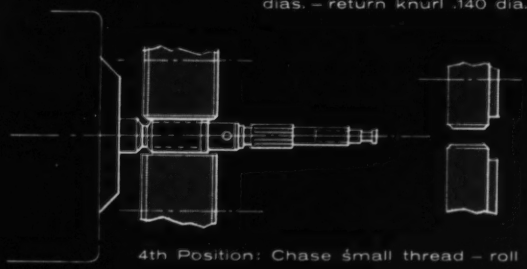
1st Position: Support – form knurl dia., .055 and .075 dias.



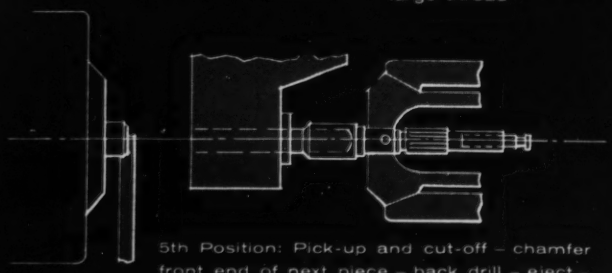
2nd Position: Stop spindle – cross drill – hollow-mill small thread dia.



3rd Position: Start Spindle – shave large thread dia. and .198, .165, .140 and .130 dias. – return knurl .140 dia. face end



4th Position: Chase small thread – roll large thread

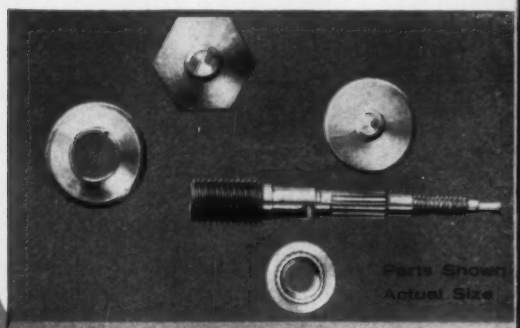


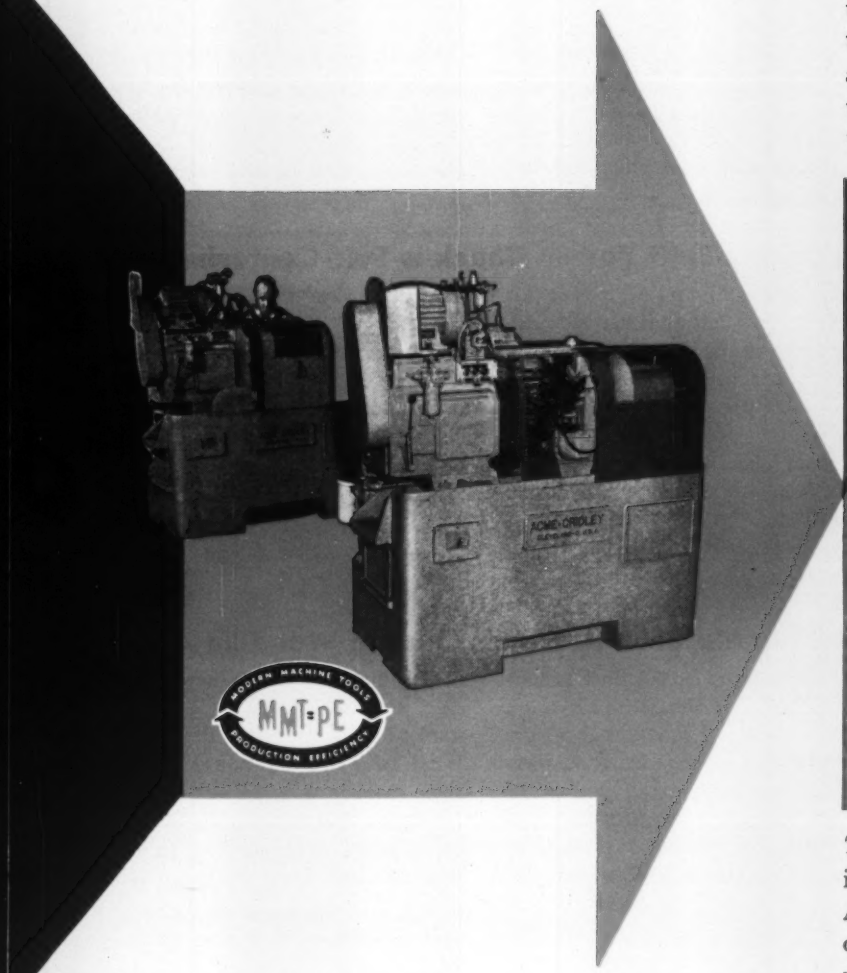
5th Position: Pick-up and cut-off – chamfer front end of next piece – back drill – eject – chamfer front end

Total Machine Time – 5 Seconds

. . . also . . . cost-per-piece is substantially reduced . . . part uniformity and quality definitely improved . . . scrappage all but eliminated.

This is the *record* of two Acme-Gridley 7/16" RA-6 Spindle Bar Automatics installed at the E. F. Johnson Company, Waseca, Minnesota. Producing some 15 intricate parts, like those shown, the rugged and versatile Acme-Gridleys continually meet the rigid specs of this well-known manufacturer; help make high quality products such as the Viking Messenger Citizen's Band two-way radio available at prices that fit the public's pocketbook.





Tangible production savings, like those realized by E. F. Johnson, are assured with Acme-Gridleys. In your plant, the 7/16" RA-6, or any of the world's most complete line of multiple-spindle automatic bar and chucking machines will show you a new dimension in mass production efficiency.

National Acme

The National Acme Company
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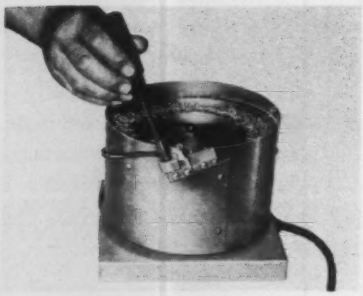
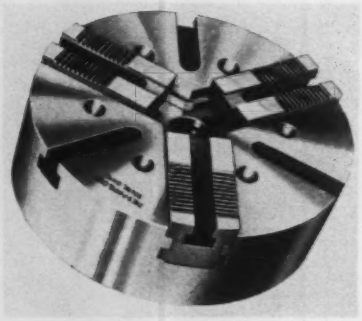
New Materials and Components



Pick-Up Feeder Aids Screwdriving Production

As simple as dipping a pen in an inkwell, a pick-up feeder keeps a constant flow of screws in proper position for contact and instant pickup. This can be done by hand or power screwdriver, whether equipped with vacuum, magnetic or spring-clip pick-up holder. The feed-up funnel is oriented and machined to the specific screw and screwdriver holder being used. Automatically feeding screws, the feeder eliminates costly time wasted in fumbling for screws, finger positioning and finger holding. It aligns screwdriver and completes driving of screws. (Burklyn Co.)

For more data circle No. 25 on postcard, p. 77



Ruggedly-Built Power Chuck is Self-Centering

Greater gripping power for heavier, cost-cutting feeds and added safety are features of an 18-in. power chuck. The body of the chuck comes as a one-piece steel casting or a special aluminum alloy forging. The chuck's great leverage holds the work more rigidly while machining with heavy cuts. The self-centering power chuck has flame-hardened ways that maintain the close fitting between master jaws and ways. Maximum jaw travel is ½ in. A hardened, alloy steel dust bushing keeps out dust and metal chips. It is ground in place and may be used as a pilot for a boring bar; also to help prevent bellmouthing. (S-P Manufacturing Corp.)

For more data circle No. 26 on postcard, p. 77

Molded Material Replaces Curved Wood Shapes

Consisting of wood chips, chopped fiber glass and polyester resin, a new molded material replaces wood wherever a curved or contoured section is desired. The material offers fracture strength about that of hard maple. When molded at pressures between 300 and 500 psi, the specific gravity approaches 1. It is molded in much the same manner as fiber glass. The new wood-chip material holds nails, tacks, staples and screws better than wood. It can be drilled and doweled in the same manner as wood, and is more resistant to moisture. Receptacles or metal fasteners can be molded into the parts made from the new material. (Gisholt Machine Co.)

For more data circle No. 27 on postcard, p. 77

Self-Crowning Abrasive Bands Grind Contours

Coated abrasive bands and belts assume any desired degree of crown, when run on inflatable rubber drums. The crowned shape eliminates the edge cutting that occurs when a flat band is accidentally tilted. It also permits accurate grinding on very narrow areas. The crowned shape diminishes chattering when operated at low pressures. The bands and belts are made of aluminum oxide abrasive in grits 40 through 180 on X-weight cloth. All-resin adhesives bond the grits. Suited for both stock removal and polishing, the bands and belts also do offhand work in confined areas; particularly on contoured surfaces. (Behr-Manning Co.)

For more data circle No. 28 on postcard, p. 77

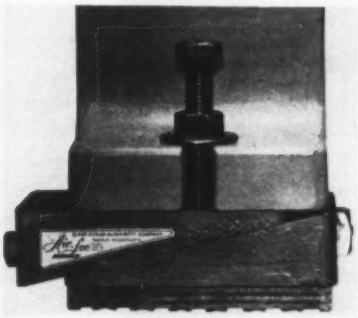
Protective Corners

Re-usable, expanded, plastic foam protective corners protect and cushion items of various sizes, weights and degrees of fragility. The corners will not "dust" or deteriorate. They have a closed cell construction and a slow controlled rebound rate of recovery. In addition, the corners are heat and fire resistant, chemically neutral and unaffected by altitude, water, oil and temperature fluctuations. (Pac-Trom Inc.)

For more data circle No. 29 on postcard, p. 77

Leveling Mount

The need for flexibility in machine layout makes this mount important. A sturdy bolt securely attaches the mount to any machine. The machine is then equipped with an effective vibration controlling mount and leveling device. The



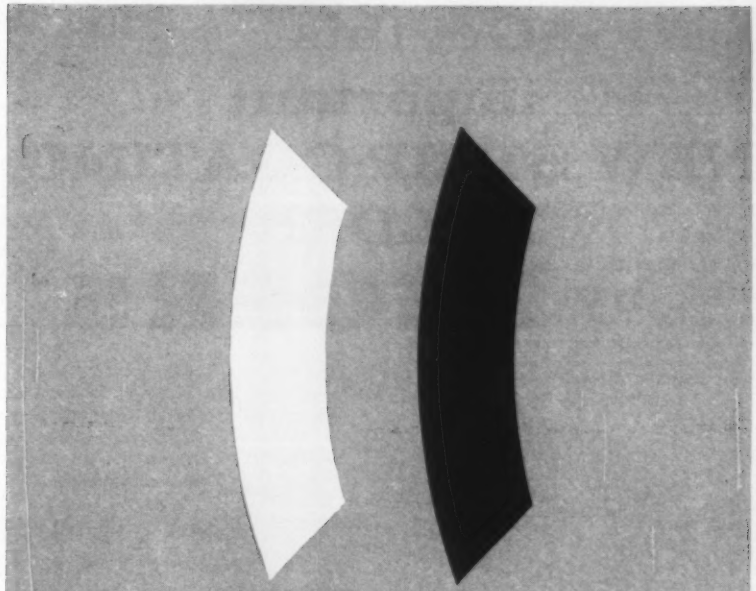
mount becomes an integral part of the machine. It also becomes a simple matter to move the machine and its wedge mount from one position to another. (Clark - Cutler - McDermott Co.)

For more data circle No. 30 on postcard, p. 77

Stainless Screw

A high-strength family of austenitic stainless steel fasteners has a minimum rated tensile strength of 125,000 lb per sq in. The series meets the need for high corrosion-resistant stainless fasteners with higher strength ratings. Selection of 304 austenitic material, controlled forging of the head and the hardening through cold working of the non-heat-treatable alloy achieve the higher design strengths. (Standard Pressed Steel Co.)

For more data circle No. 31 on postcard, p. 77



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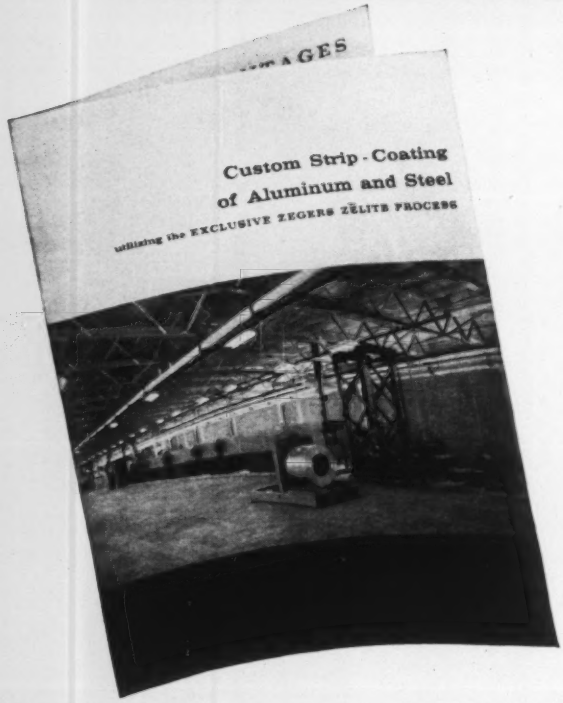

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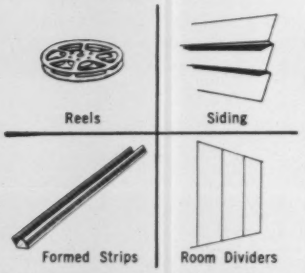

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PATENT REVIEW

New Patents In Metalworking

No White Layer

Elimination of white layer in nitrided steel, R. F. Erxleben (assigned to National Broach & Machine Co., Detroit), Nov. 15, 1960. In the elimination of the white layer in nitrided steel, the steel is coated with copper or bronze. Heat is then applied in a controlled atmosphere. This is done for a predetermined period of time depending on the depth of case desired. Finally, the coating is removed. No. 2,960,421.

Expands-Contracts

Alloys, H. C. Smith, Jr. (assigned to Wilbur B. Driver Co., Newark, N. J.), Nov. 15, 1960. An alloy has expansion-contraction properties sufficiently close to those of high-alumina ceramics. It permits forming hermetic seals therebetween. The alloy consists of about 25.2 pct Ni, 28.5 pct Co and the balance substantially all Fe. No. 2,960,402.

How to Harden Stainless

Method for hardening chromium-nickel stainless steel, D. C. Perry (assigned to Armco Steel Corp., a corp. of Ohio), Nov. 1, 1960. In the hardening of chromium-nickel stainless steel, the steel is annealed at 1700-1850°F. It is then cooled and stabilized. This is accomplished by preheating to 850-950°F. The steel is then activated by reheating, transformed by refrigeration and reheated to 700-1150°F. No. 2,958,-617.

Copies of U. S. Patents are available at 25¢ each from Commissioner of Patents, Washington 25, D. C.

New Catalogues And Bulletins

Money-saving products and services are described in the literature briefed here. For your copy, just circle the number on the free postcard.

Welding Gun, Torch

An automatic torch for MIG and TIG welding, and a gun for semi-automatic welding, are described in a bulletin. Features of both units are listed. (Chemetron Corp.)

For free copy circle No. 1 on postcard

Gas Generators

A four-page catalog details the company's reversible, endothermic gas generators. The catalog section describes the equipment in detail. It includes flow diagram, equipment list and specifications. (Rolock Inc.)

For free copy circle No. 2 on postcard

Power Tools

Industrial power tools and accessories are described in a 92-page catalog. Complete specifications, catalog listings and descriptions of accessories for all tools are included. Action photos and drawings supplement the text. (Rockwell Mfg. Co.)

For free copy circle No. 3 on postcard

Radial Drill

A four-page illustrated bulletin describes an 11-in. radial drilling machine. Included are detailed descriptions of standard machine features. Dimensions and specifications also are listed. (Giddings & Lewis Machine Tool Co.)

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AC Motors

Dimensions, ratings and all other application information, on fractional horsepower ac motors, are detailed in a four-page folder. The free literature uses photographs, specification charts and engineering drawings to show design and performance details. (Leece-Neville Co.)

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Packaging Machinery

Six types of packaging machinery are described in a single-page catalog. (Product Packaging Engineering)

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Inner Ring Ball Bearings

Dealing with inner ring ball bearings and power transmission units, a 60-page catalog contains complete specification charts. Also included are diagrams and photographs. (The Fafnir Bearing Co.)

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Strapping Machines

Specifications of 14 models of compression strapping machines are detailed and compared in a folder. Power requirements, critical dimensions, platen openings and other factors affecting model selection are charted for each of the models. (Signode Steel Strapping Co.)

For free copy circle No. 8 on postcard

Plant Layout

A 12-page brochure includes a layout kit containing 187 items for those who would like to test and gain experience in a 3-dimensional engineering tool. ("Visual" Plant Layouts)

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Press Brake Dies

Over 360 drawings of standard and special press brake dies are contained in a 28-page catalog. It lists the standard and special, single and multiple bend forming, blanking, notching and punching dies. The catalog also contains tonnage requirement tables for both punch-

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FREE LITERATURE

ing and bending various thicknesses of mild sheet steel. (Valeron Corp.)
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Diamond Dressing Tools

In a comprehensive catalog are photographs, diagrams, specifications and pricing information for a complete line of diamond dressing tools. Catalog inserts cover loose industrial diamonds, diamond compounds and pressure-tested powders, mining bits and diamonds grinding wheels. (Diamond Tool Research Co., Inc.)
For free copy circle No. 11 on postcard

Flat Belt Pulleys

Four pages long, a bulletin covers a complete line of flat belt pulleys. They come in widths from 2½-12 in. and outside diameter from 4-36 in. (T. B. Wood's Sons Co.)
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Hand Welding Torches

Welding torches, capable of welding any metal thickness from 28 gage sheet heavy plate, are described in an eight-page booklet. Complete ordering information and performance data on a complete selection of welding heads and cutting nozzles are also included. (Linde Co.)
For free copy circle No. 13 on postcard

Manganese

An abundance of useful information on manganese is contained in a 26-page booklet. The information touches on the nature, sources, and markets of this unusual element. (E. J. Lavino & Co.)
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Screw Feeders

Test performance of screw feeding equipment, for 456 different dry materials from abrasives to zinc stearate, is described in an eight-page folder. (Vibra Screw Feeders, Inc.)
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Bucket Elevators

Industrial bucket elevators are covered in a 22-page booklet. The elevators bulk materials. The booklet contains engineering data on various types of bucket elevators. It recommends the grades of belting best suited for elevating materials of different weight, abrasiveness and temperature. (Hewitt-Robbins Inc.)
For free copy circle No. 16 on postcard

Gear Finishers

Six pages in length, a bulletin describes abrasive hard gear finishers. It also illustrates how they are used for final surface conditioning of gear teeth after hardening. Complete physical specifications are given on the machines. (Michigan Tool Co.)
For free copy circle No. 17 on postcard

Lever Guns

A bulletin illustrates and describes lever guns. One model handles lube cartridges and the other dispenses bulk grease. (Lincoln Engineering Co.)
For free copy circle No. 18 on postcard

Filter Cartridges

A bulletin describes disposable filter cartridges. They filter plating solutions, diesel fuels, chemical process streams and many other fluids. The bulletin goes on to describe the manufacturing process. Performance advantages and other specifications are included. (The Cuno Engineering Corp.)
For free copy circle No. 19 on postcard

Generating Sets

Emergency generating sets are described in a bulletin. The 12-page publication contains data selection tables. (Fairbanks, Morse & Co.)
For free copy circle No. 20 on postcard

Charts and Inks

The complete story of how the manufacturer's charts and inks are made is contained in a 24-page catalog. Also included are partial lists of the most commonly used strip and circular charts, and pneumatic and electric charts. (Minnneapolis-Honeywell Regulator Co.)
For free copy circle No. 21 on postcard

Table-Rooms

Push-buttoned controlled table-rooms are described in a 12-page bulletin. These units blast clean various-sized pieces ranging from small parts to castings or weldments up to 10-ft wide. In addition to photographs and cut-away diagrams, the bulletin gives complete dimensions and specifications of eight table-rooms. (Pangborn Corp.)
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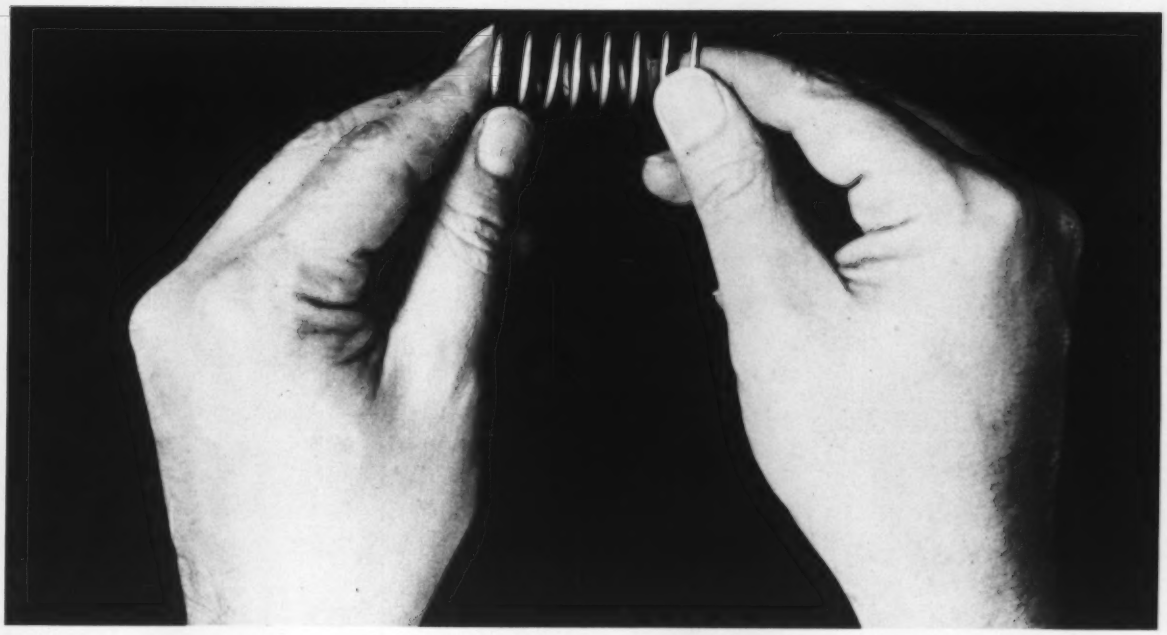
N-S SPRING MATERIAL MAKES THE DIFFERENCE



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61-W01A

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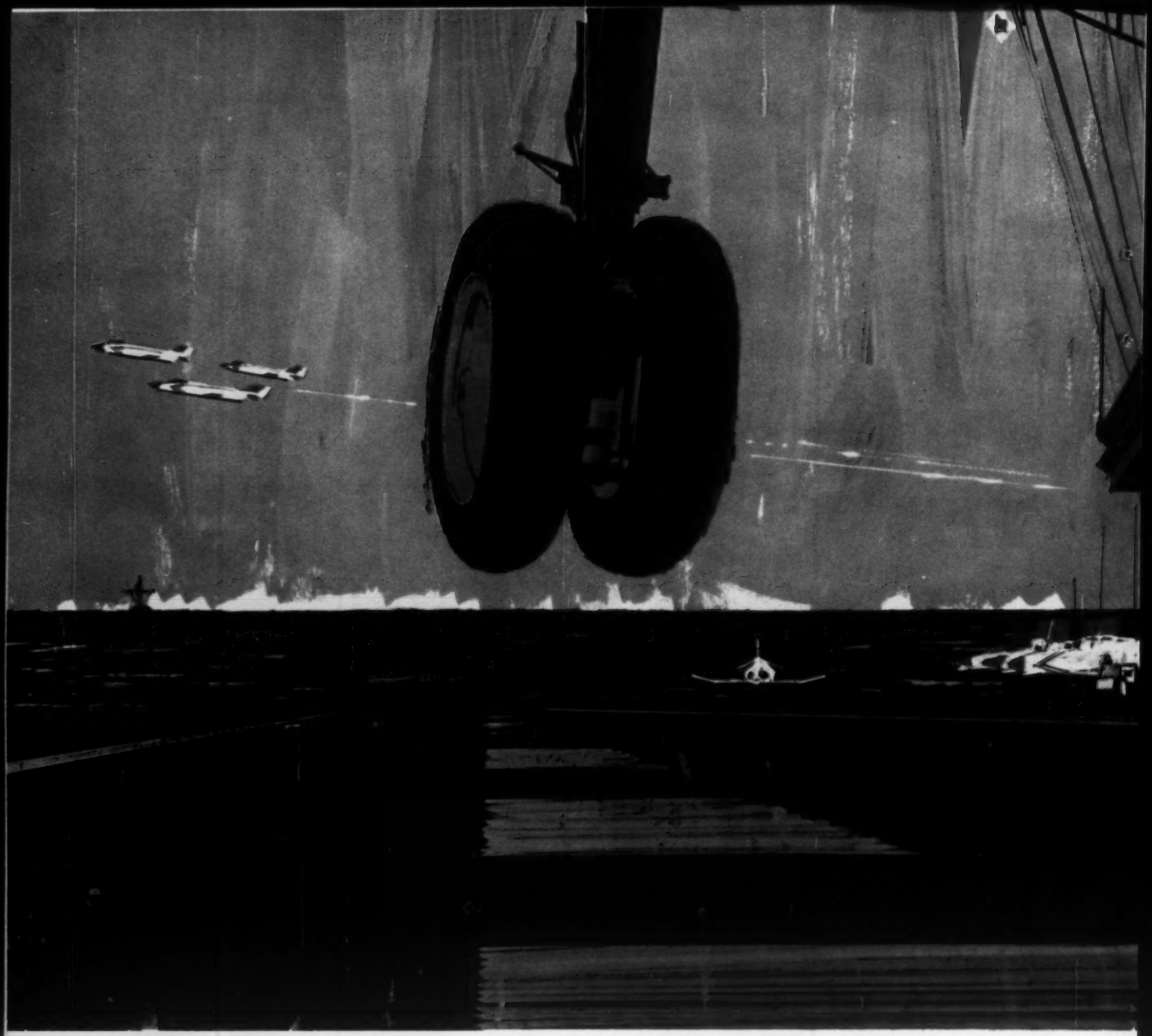


NS SPECIAL WIRE WITHSTANDS 1000°F

Landing hot jets like the McDonnell Phantom II at high speeds, means brakes and brake components must be able to withstand extreme temperatures without failure.

A leading manufacturer of brakes for jet aircraft came to National-Standard for help in finding a spring wire that would have high stress-temperature stability up to 1000°F. National-Standard engineers recommended an austenitic superalloy material, NS-A286, recently developed for spring wire applications by National-Standard. Tests showed that NS-A286 met requirements better than any other available alloy, yet cost only half as much as the next best alloy.

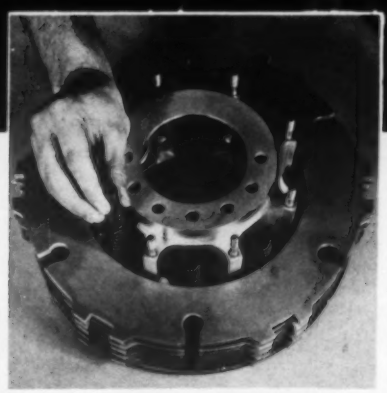
SUPERALLOY PASSES TEST—When brakes on the Phantom II are released, the NS-A286 return springs under the brake discs must separate the stationary stator discs from the moving rotor discs. The brake discs build up heat to 1400°F, which is quickly absorbed by the return springs, raising spring temperatures to as much as 1000°F. NS-A286 is a precipitation hardening alloy exhibiting as little as half the relaxation loss at 1000°F as comparable alloys show at 850°F. NS-A286 springs must retain their strength at this heat to separate the brake discs and guard against brake drag during landings.

To test NS-A286, engineers simulated stress-temperature characteristics of three landing conditions.

TO BRAKE JETS

Heat builds up in the brakes in 30 seconds and remains for as long as 20 minutes. The springs must work in the heat against a high back pressure maintained in the aircraft hydraulic system. Springs must be operational for at least 45 normal landings, 5 high-speed, gross weight landings, and one aborted take-off stop, corresponding to stopping the plane just before it becomes airborne. Under all test conditions, NS-A286 met every rigid requirement.

EXPERIENCED ENGINEERING HELP of this kind, for jobs requiring high-quality wire, to meet special or unique applications, is available to you from National-Standard. Write for additional information to National-Standard Company, Niles, Michigan.



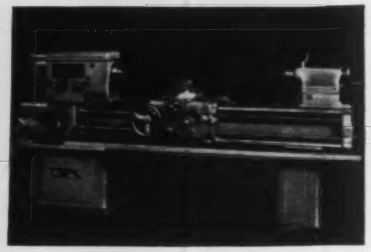
NS-A286 SUPERALLOY WIRE, produced by National-Standard, meets critical stress-temperature demands for coaxial return springs in brakes of F4H-1 Phantom II.

Manufacturer of Specialty Wire and Metal Products

NATIONAL-STANDARD COMPANY

Niles, Michigan

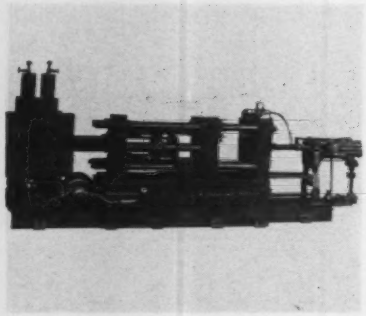
New Equipment and Machinery



Lathe Offers Field-Proven Production, Accuracy

A compact lathe handles all conventional turning, boring, facing and thread chasing operations. Swing over the bed is 16 in. Swing over the cross slide is 10 in., and center distance is 54 in. The bed is a heavily-ribbed, super-alloy casting, with four flame-hardened and precision-ground ways. There are 16 geared speeds in a range of 28-1200 rpm. Headstock lubrication is automatic. (The Monarch Machine Tool Co.)

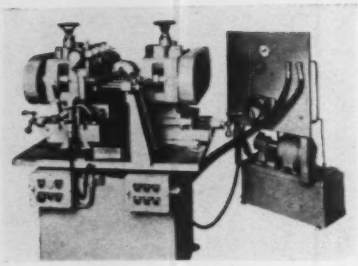
For more data circle No. 32 on postcard, p. 77



Die Casting Machine Has Large Locking Pressure

With a strain-gage tested locking pressure of 400 tons or better, a die-casting machine also incorporates major design changes. The machine has 40½- x 40-in. (vertical and horizontal) size die plates. Space between tie bars is 20 x 24 in. It will accommodate dies having 32-in. maximum and 12-in. minimum thickness. Adjustable die opening ranges from 6-12 in. There is maximum accessibility for inserting ejector pins. Die stroke is adjustable by turning a handwheel. A calibrated scale indicates length of stroke. Cold chamber end and hot chamber end employ improved designs. (The Cleveland Automatic Machine Co.)

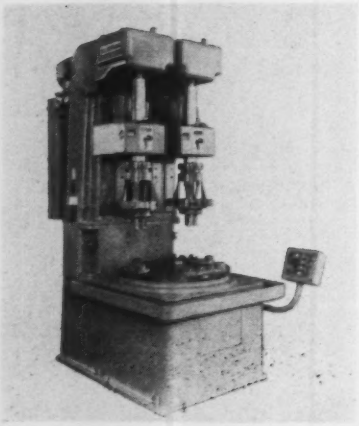
For more data circle No. 33 on postcard, p. 77



Duplex Half Mill Squares Steel Plates

Using the building block principle, a machine squares both sides of three ½-in. thick steel plates, in production lots. Variations of this highly-flexible unit can perform slotting, sawing, keyway cutting, face milling, slab milling, boring and a variety of other operations. This unit achieves its specialized purpose through a combination of: two standard #40 taper spindle heads; standard cross slides and a standard hydraulic system with full electrical controls. (U. S. Burke Machine Tool Co.)

For more data circle No. 34 on postcard, p. 77

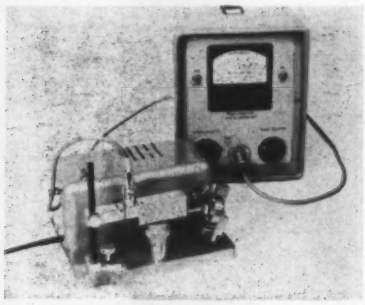


Machine Does Drilling and Tapping Operations

Readily adaptable to special applications, a two-spindle drilling and tapping machine gives high-production with precision. Mounted on a special base are two or more columns. The unit also utilizes rotary-type index tables. Depressing a push button obtains a complete cycle at all stations at the same time. While the tools are working, the operator removes the finished part and loads another at the loading and unloading station. The machine gives a complete, automatic cycle—a drilled and tapped hole without further work. Ease of setup, pick-off change gears, broad ranges of speeds, feeds and tap leads make this machine ideal for small lot or production runs. The building block concept of construction provides low initial cost investment and basic machine elements for changeover to new and different piece parts. The machine also provides rigidity in the heavy structural members. (Cleereman Machine Tool Corp.)

For more data circle No. 35 on postcard, p. 77

Rotary Pilotor



High - production checking of average surface roughness in microinches is possible with the use of a rotary pilotor. The device renders this around surfaces of rotation and across the radii of small parts, both internal and external. Both reciprocating and continuous tracing motion are provided. This makes the pilotor adaptable to a wide range of parts. (Micrometrical Mfg. Co.)

For more data circle No. 36 on postcard, p. 77

X-Y Plotter

Accurate to 0.05 pct of full scale, a 30- x 30-in. X-Y plotter repeats exactly from any direction. Input to the plotter can be from IBM cards, punched paper tape or keyboard. Slewing speed is up to 20 in. per second. The printing head contains 12 symbols, any of which can be selected at random. The solid-state plotter is based on an engineering concept that eliminates servo mechanisms. (The Gerber Scientific Instrument Co.)

For more data circle No. 37 on postcard, p. 77

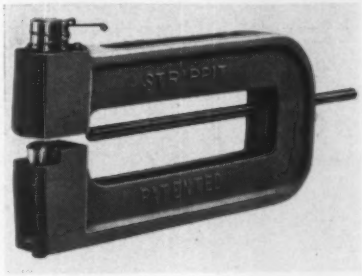
Applies Fluxes

A compact, portable pressure device applies fluxes to the interiors of reverberatory melting units. Its primary purpose is to apply the manufacturer's furnace - cleaning flux to the walls of large aluminum furnaces. It facilitates the removal of oxide build-up and increases melting efficiency. The unit also finds use for applying covering and drossing-off fluxes. The unit consists of a cylindrical flux tank, pressurized by connection to any low-pressure air line. A discharge hose and a lance fitted with a spreader completes the make-up of the unit. (Foundry Services, Inc.)

For more data circle No. 38 on postcard, p. 77

Hole Punching Units

For use with or without guide buttons, hole punching units require only a punch and die to punch both round and shaped holes. The units can punch holes in material up to 10 gage. All holders are keyed and are supplied with self-storing keys. This makes it possible to use both round and shaped



punches and dies in the same holder. Design of the die section permits easy removal and rotation of the die without removing the

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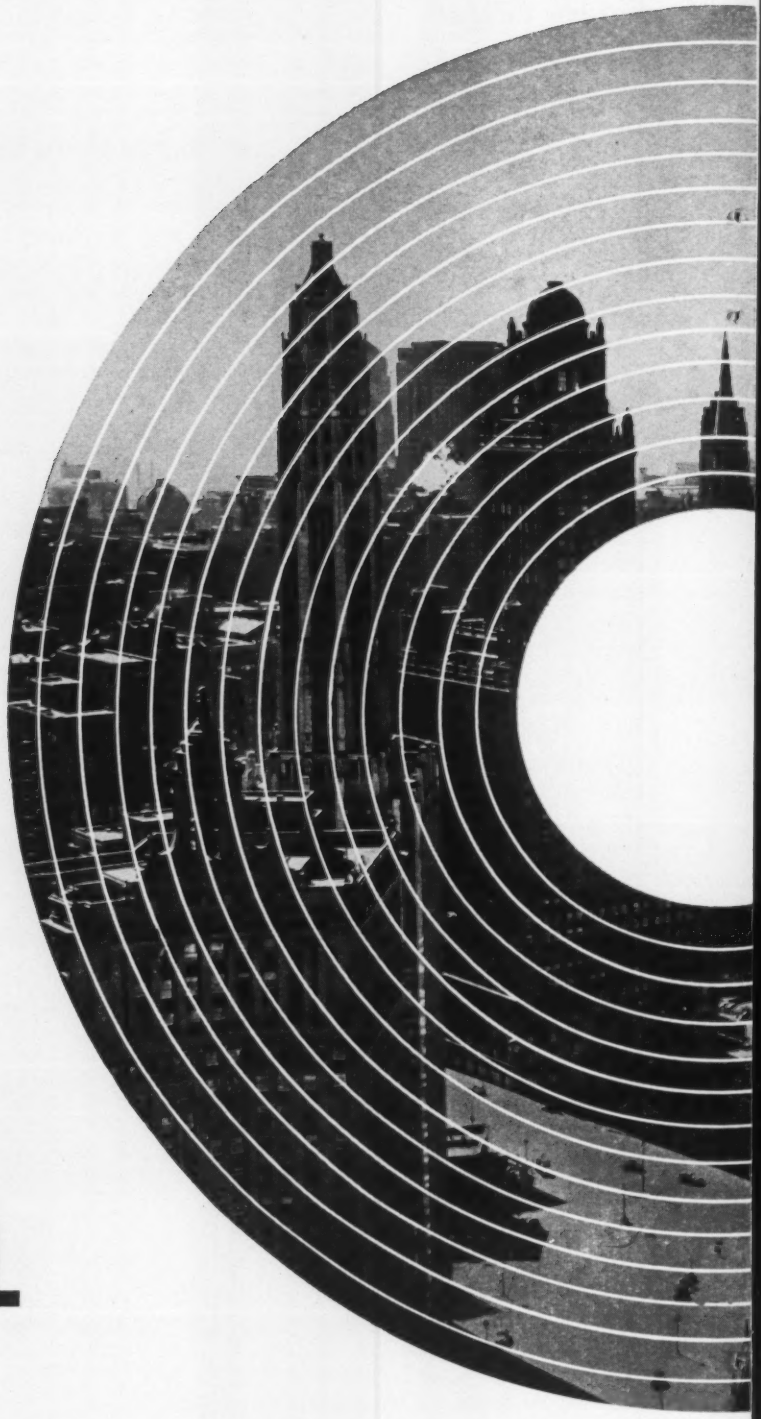

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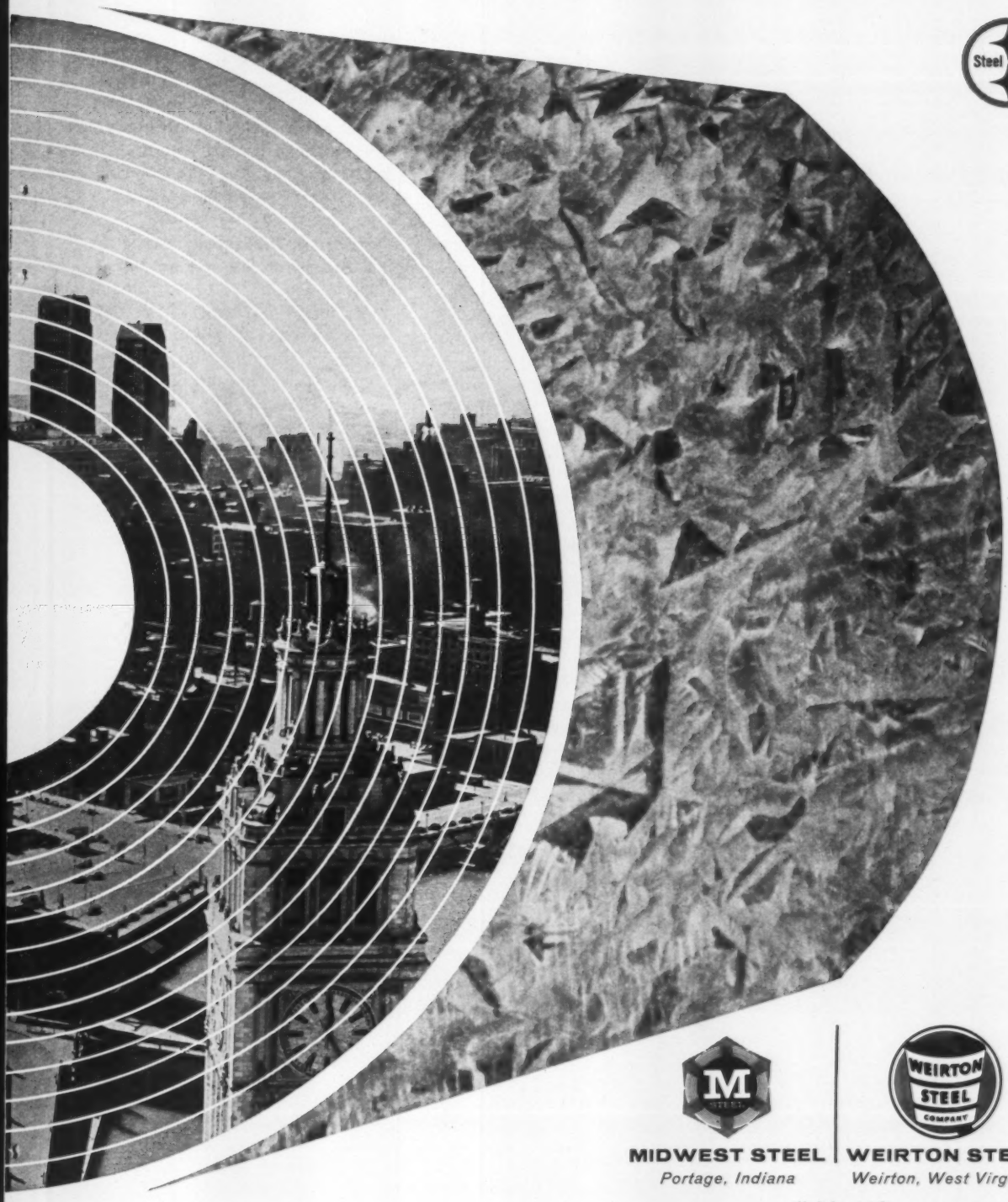

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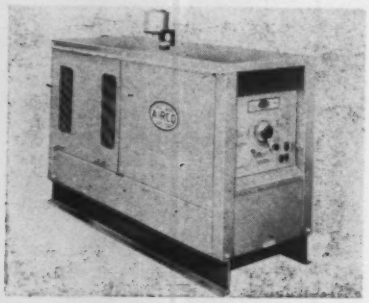
NEW EQUIPMENT

die holder from the set-up. (Wales Strippit Inc.)

For more data circle No. 39 on postcard, p. 77

Engine-Driven Welders

Requiring only a minimum of maintenance, engine-driven welders provide rugged and dependable service. One model is a 225-amp, ac-dc unit that handles stick elec-



trode welding, Heliwelding and Aircomatic welding. Two new dc diesel welders do field welding where rough usage is encountered. (Air Reduction Sales Co.)

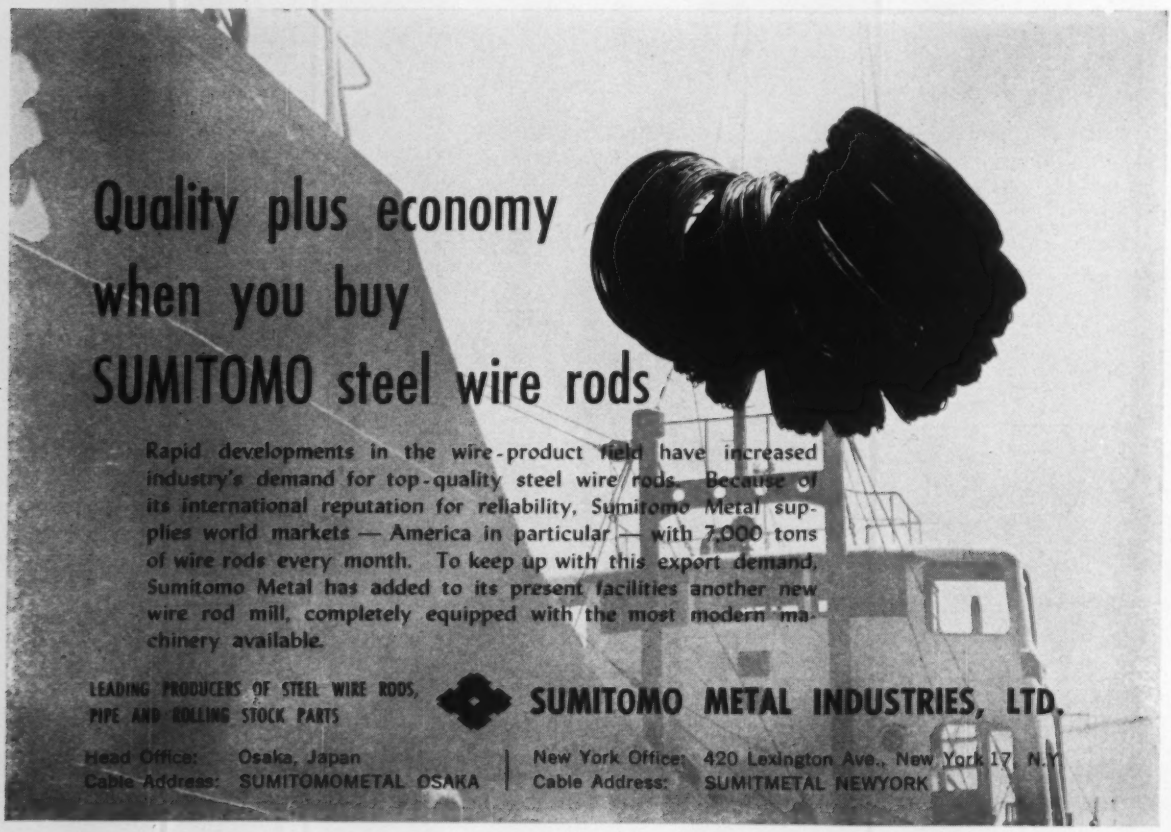
For more data circle No. 40 on postcard, p. 77

NEW BOOKS

"AWS Standard Welding Terms and Their Definitions" is a dictionary of welding. In conjunction with the American Welding Society definitions is a master chart of welding processes. The 39 recognized welding processes are presented in a new layout designed for ready reference. Colors are used to separate the various welding processes. $2.00. American Welding Society, Dept. T, 33 W. 39th St. New York 18.

"The Supervisor—Key Management," by Charles W. Johnson, Jr., covers almost any kind of situation that might arise between supervisor and worker. It takes in proper induction and job instruction to the problems of absenteeism and discipline. There are suggestions on how to motivate a worker and keep him motivated; also, detailed guides on how a supervisor can bring out the best work in such types as the super-sensitive employee, the lazy worker, the slow man, the roughman and the sloppy worker. Many of the points covered are illustrated by case histories. In addition, there are charts and checklists for supervisors' use in dealing with specific problems. $2.00. Prentice-Hall, Inc., Englewood Cliffs, N. J.

"List of Publications Issued by the Bureau of Mines from July 1, 1910 to January 1, 1960" contains more than 7500 items. A detailed index provides a guide for easy search of scientific and other information in the realm of minerals. Also included are names of the many depository libraries that carry the Bureau's reports on their reference shelves. Also between the book's covers are references to the Bureau's work on coal, petroleum and other fossil fuels; in discovering and appraising ore bodies and in creating production processes of metals. 826 pp. $4.25. Superintendent of Documents, Government Printing Offices, Washington 25, D. C.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Steel Trend Is Still a Mystery

There are a few signs of a minor improvement showing up in steelmaking operations.

But there are enough negative factors, particularly autos, to put a cloud around trends.

▪ January steel shipments could show as much as a 10 pct "improvement" over December.

Even so, it doesn't look as though the month will do much more than regain the levels of October and November. There are still enough negative factors at work in the market to hold any gain below that figure.

Plus and Minus — Automakers will trim about 300,000 units from first quarter schedules, compared with the last quarter of 1960. And cuts aren't limited to just one or two companies.

The past week had the earmarks of pushbacks pending in some auto orders. But any definite trend in steel will not be known for one or two months—except that the almost depression levels of December are past.

While automakers have indicated caution in their first quarter schedules and buying plans, there is a little more encouraging activity in other markets.

Positive Factors—Here are some positive factors:

1. Consumption is still holding at a level well above shipments. One of these days, steel mill operations will have to reflect this.

2. Seasonal factors may be concealing gains for some products. Stainless steel didn't fall off in December. And heavy steels are holding at steady, if low, levels in the winter period.

3. The sheet market, which has been held up by auto demand, is starting to get some support from appliance and general users.

4. Oil producers have started buying a little more seamless pipe. The gain started last month. And it indicates inventories are finally running out.

5. There are more orders from smaller companies.

Against a Rise — But negative factors are still working against a rapid and sharp recovery in steel operations.

Some minus influences are:

1. Linepipe projects, which take large tonnages of steel, aren't due to start moving until spring.

2. Tinplate is still a month or two away from its next heavy shipping season.

3. Construction is still several months away from its seasonal upturn.

4. Automakers plan a substantial reduction in production compared with last year when the steel strike was just ending.

New Steel Index — The revised method of reporting steel operations which the American Iron and Steel Institute adopted this year appears below. Index figures now replace "percent of capacity" data. Reporting an index for the 11 steelmaking districts was suggested by The IRON AGE: these figures are now issued by the Institute.

There are at least four reasons why comparable district data are extremely useful: (1) Many industries use these figures to check one sales territory against another; (2) railroads use them to plan car movements; (3) local civic groups use comparative data to keep tab on trends; and (4) they are useful in the field of steelmaking raw materials.

District Steel Production Indexes 1957-59=100

	Last Week	Two Weeks Ago	Month Ago*
North East Coast	70	52	60*
Buffalo	59	54	61*
Pittsburgh	62	49	66*
Youngstown	58	38	55*
Cleveland	77	52	54*
Detroit	99	68	79*
Chicago	85	75	83*
Cincinnati	76	72	84*
St. Louis	63	57	71*
Southern	77	65	52*
Western	85	81	85*
U. S. Index	73.1	59.2	69.0

Source: American Iron & Steel Institute
*IRON AGE Estimate

Steel Production, Composite Prices

Production	Last Week	Two Weeks Ago	To Date 1961	To Date 1960
(Net tons, 000 Omitted)	1,361	1,103	1,361	2,175
Ingot Index				
(1957-59=100)	73.1	59.2	73.1	145.7
Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel, base (cents per lb)	6.196	6.196	6.196	6.196
Pig Iron (Gross ton)	$66.44	$66.32	$66.32	$66.32
Scrap No. 1 hvy Gross ton)	$31.17	$31.17	$28.50	$41.50
No. 2 bundles	$21.50	$21.50	$18.50	$28.17

Press Builders Boost Sales

At a time when the demand for general capital equipment is weak, big press builders are selling.

The overseas market is the big reason. Domestically, things are dead.

■ Big press builders are bucking the trends and appear to be boosting press sales at a time when general capital equipment demand is not strong.

Clearing Machine Div., U. S. Industries, Inc., is shipping a 650,000-plus lb press to Isuza Motor Ltd., Tokyo, Japan, at a reported price of $435,000. The unit is the first of five expected to move to the Japanese company, and will be used in manufacturing parts for the Hillman Minx.

The big 1000-ton capacity press has a 84 by 108 in. bed; delivers a 38 in. stroke; operates at 10 cycles per minute.

A Strong Outlook—Other major press builders report the international outlook continues strong. While there has been some slippage in orders from Europe, backlogs of equipment aimed at that market are still high. Meanwhile, pressmen are exploring the Australian, Indian, and even Near Eastern markets with increased attention.

As a result of the incoming foreign orders, plus a wave of new U. S. automotive orders (some for U. S. auto plants to be built abroad), delivery times on large special presses have extended as much as two months over the past 60 days. Builders of heavy press equipment report, in some cases, backlogs that look good until at least the end of June.

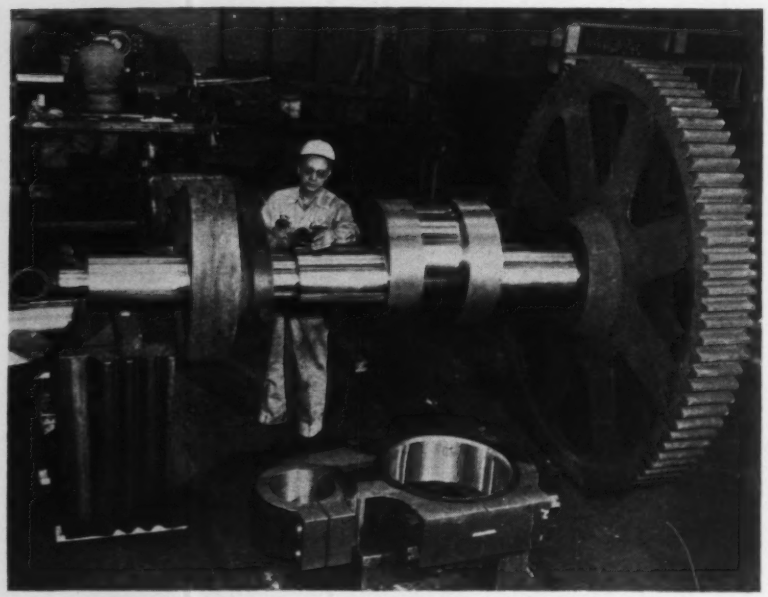
A Weak Outlook—The domestic picture isn't as strong. Prices continue soft. Profit margins are slim, and some manufacturers expect that, because of recent wage increases, there will be no relief until at least the second half.

And while orders for heavy, special equipment have been building up during the fourth quarter—and are expected to increase again during the first quarter—orders for off-the-shelf equipment are no more than holding their own.

Several producers now expect that light press equipment sales will decline further before April. A leveling, they feel, should come in the second quarter as new 1961 capital appropriations begin getting late circulation.

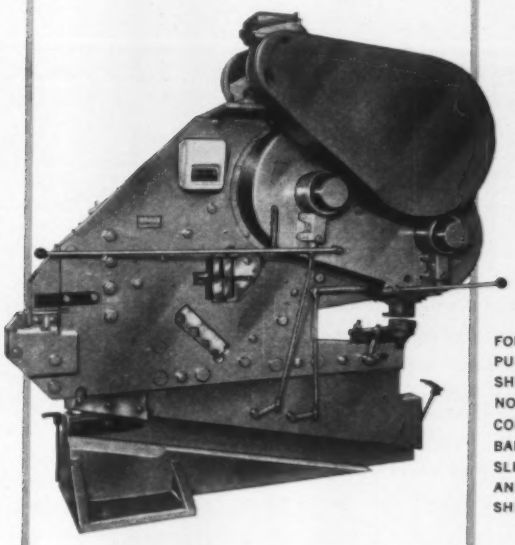
A Confused Situation—The year-end situation, they point out, is somewhat confused by a very high inquiry rate. Part of this is due to increased foreign and U. S. auto industry buying. But part of it is also due to "shopping for price" by company officers who are drawing up 1961 budgets and are testing price, rather than planning any active press purchasing in the immediate future.

Where companies are active in press purchases, with the exception of some auto industry buying, it's felt that the buyer is modernizing his shop with new presses, rather than actively expanding capacity.



MORE CAPACITY: Some press builders are adding capacity to existing presses. Here the crankshaft for a seven-ft bull-gear is being rebuilt. The use of vacuum degassed steel in the new shaft steps up ability to handle overload jobs and prolongs the life of the press.

RUGGED ARMOR PLATE CONSTRUCTION FROM FRANCE



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Warehouse Price Changes Spread

Last week's switch away from item quantity pricing in the Midwest has spread to the Southwest and is moving east.

Service centers between Cleveland and Pittsburgh are equalizing against the new prices.

■ Warehouse price revisions, which began in the Midwest last week, have spread into the Southwest. And there are indications the changes are traveling eastward.

The movement started when Midwest service centers returned pricing to an order-quantity basis, eliminating item quantity extras (IA—Jan. 5, '61, p. 274).

Distributors pointed out under the revised system buyers who combined small item quantities into large orders might save as much as $2-3 a ton.

Adapted in Southwest — Since then, service centers in Dallas and Houston have also dropped item quantity extras, converting the Southwest to the new pricing system. In addition, Rockford, Ill., warehouses also adapted the change. Reports indicate service centers midway between Cleveland and Pittsburgh are equalizing against the Cleveland price cuts.

If Pittsburgh warehouses swing over to the revised pricing, it's expected the entire East Coast will go along.

In the Midwest, it's still too early to tell what effects the changes will have on business. But, because of the condition of the market, many distributors don't expect any large spurt in sales.

More Inventory Cuts—With sales slow, warehouses are watching their own inventories. Two large chains admit they will cut "model inventories." (These are the inventories generally regarded as the absolute necessity, regardless of business conditions.)

These distributors plan to continue inventory cuts, on selected grades, through 1961. Reductions of 20 pct or more will be made in stocks of heavy structurals, some sizes of carbon bar, and some grades of plate.

However, this probably won't affect their mill purchases. The cutbacks will be spread over a year and are confined to low-volume grades of steel. Many warehouses are already at minimum inventories on sheet, strip, most bar grades, light angles, and structurals.

Sheet and Strip—Despite the hesitancy being shown by automakers in the **Midwest,** there are indications flat-rolled items are picking up a little. **Pittsburgh** mills say a revival in orders from appliance and general users is offsetting automotive declines.

PURCHASING AGENT'S CHECKLIST

Results of Treasury's depreciation survey—an IRON AGE Special Report. P. 31

Use care in using government inventory statistics. P. 36

U.S. iron ore faces tough competition from imports. P. 38

And the outlook is for a further improvement in February.

Cleveland area producers have been hit with some pretty hefty cutbacks from automakers; and these are expected to be followed by similar action from auto suppliers. While small orders are increasing, mills are quick to point out that it takes a lot of small orders to make up for one big order.

A mill in **Chicago** says it has revised its projection for January from a 5 pct to a 10 pct gain over December, and it looks for another increase next month.

Tinplate—Carryover user inventories are tending to slow shipments. Consequently, tinplate is moving upward at a slower-than-normal rate. One **Pittsburgh** mill believes uncertainty over thin tinplate is also producing hesitation.

However, another producer has announced development of a "new light-gage high-strength tinplate" for the container industry. Wheeling Steel Corp., Wheeling, W. Va., says it will begin commercial production in March or April. The new tinplate will be manufactured in 55 lb and 60 lb base weights, in coils and sheeted plate. The company said the new tinplate is a "special purpose product, specifically designed to meet competition from other materials in the container field."

Pipe and Tubing—Major oil companies are starting to order more seamless, according to reports from **Pittsburgh.** Producers are still ordering from day to day and volume is below normal; but the gain is enough to indicate inventories are finally running out.

Problems in Belgium

Strikes and unrest in Belgium have hit deliveries of that country's steel to the U. S. Major Belgian mills are located in the areas in which strikes have been the bitterest. Many were forced to close.

Communications between commercial sources in Belgium and the U. S. were disrupted. Consequently, it isn't known for sure just how soon the problem will be untangled.

COMPARISON OF PRICES

(Effective January 9, 1961)

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Price changes from previous week are shown by an asterisk (*).

	Jan. 9 1961	Dec. 30 1960	Dec. 6 1960	Jan. 12 1960
Flat-Rolled Steel: (per pound)				
Hot-rolled sheets	5.10¢	5.10¢	5.10¢	5.10¢
Cold-rolled sheets	6.275	6.275	6.275	6.275
Galvanized sheets (10 ga.)	6.875	6.875	6.875	6.875
Hot-rolled strip	5.10	5.10	5.10	5.10
Cold-rolled strip	7.425	7.425	7.425	7.425
Plate	5.30	5.30	5.30	5.30
Plates, wrought iron	14.10	14.10	14.10	13.55
Stain'l's C-R strip (No. 302)	52.00	52.00	52.00	52.00
Tin and Terneplate: (per base box)				
Tin plates (1.50 lb.) cokes	$10.65	$10.65	$10.65	$10.65
Tin plates, electro (0.50 lb.)	9.35	9.35	9.35	9.35
Special coated mfg. ternes	9.90	9.90	9.90	9.90
Bars and Shapes: (per pound)				
Merchants bar	5.675¢	5.675¢	5.675¢	5.675¢
Cold finished bar	7.65	7.65	7.65	7.65
Alloy bar	6.725	6.725	6.725	6.725
Structural shapes	5.50	5.50	5.50	5.50
Stainless bars (No. 302)	46.75	46.75	46.75	45.00
Wrought iron bars	14.90	14.90	14.90	14.90
Wires: (per pound)				
Bright wire	8.00¢	8.00¢	8.00¢	8.00¢
Rails: (per 10 lb.)				
Heavy rails	$5.75	$5.75	$5.75	$5.75
Light rails	6.725	6.725	6.725	6.725
Semifinished Steel: (per net ton)				
Rerolling billets	$80.00	$80.00	$80.00	$80.00
Slabs, rerolling	80.00	80.00	80.00	80.00
Forging billets	99.50	99.50	99.50	99.50
Alloys, blooms, billets, slabs	119.00	119.00	119.00	119.00
Wire Rods and Skelp: (per pound)				
Wire rods	6.40¢	6.40¢	6.40¢	6.40¢
Skelp	5.05	5.05	5.05	5.05
Finished Steel Composite: (per pound)				
Base price	6.196¢	6.196¢	6.196¢	6.196¢

	Jan. 9 1961	Dec. 30 1960	Dec. 6 1960	Jan. 12 1960
Pig Iron: (per gross ton)				
Foundry, del'd Phila.	$70.68***	$70.11	$70.11	$70.57
Foundry, South Cin'ti	71.92	71.92	71.92	73.87
Foundry, Birmingham	62.50	62.50	62.50	62.50
Foundry, Chicago	66.50	66.50	66.50	66.50
Basic, del'd Philadelphia	70.11***	69.61	69.61	70.07
Basic, Valley furnace	66.00	66.00	66.00	66.00
Malleable, Chicago	66.50	66.50	66.50	66.50
Malleable, Valley	66.50	66.50	66.50	66.50
Ferromanganese, 74-76 pct Mn, cents per lb.‡	11.00	11.00	11.00	12.25
Pig Iron Composite: (per gross ton)				
Pig iron	$66.44***	$66.32	$66.32	$66.41
Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$29.50	$29.50	$26.50	$43.50
No. 1 steel, Phila. area	34.50	34.50	33.50	41.50
No. 1 steel, Chicago	29.50	29.50	25.50	39.50
No. 1 bundles, Detroit	26.50*	27.50	21.50	39.50
Low phos., Youngstown	34.50*	33.50	28.50	48.50
No. 1 mach'y cast, Pittsburgh	44.50	44.50	44.50	55.50
No. 1 mach'y cast, Phila.	47.50	47.50	47.50	54.50
No. 1 mach'y cast, Chicago	44.50	44.50	41.50	60.50
Steel Scrap Composite: (per gross ton)				
No. 1 hvy. melting scrap	$31.17	$31.17	$28.50	$41.50
No. 2 bundles	21.50	21.50	18.50	28.17
Coke, Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.75-15.50	14.75-15.50	14.75-15.50	14.75-15.50
Foundry coke, prompt	18.50	18.50	18.50	18.50
Nonferrous Metals: (cents per pound to large buyers)				
Copper, electrolytic, Conn.	30.00	30.00	30.00	33.00
Copper, Lake, Conn.	30.00	30.00	30.00	33.00
Tin, Straits, N. Y.	100.50†	101.50	102.50	99.50
Zinc, East St. Louis	....	12.50	13.00	13.00
Lead, St. Louis	11.00	11.00	11.80	11.80
Aluminum, ingot	26.00	26.00	26.00	28.10
Nickel, electrolytic	74.00	74.00	74.00	74.00
Magnesium, ingot	36.00	36.00	36.00	36.00
Antimony, Laredo, Tex.	29.50	29.50	29.50	29.50

† Tentative. ‡ Average. ** Revised. *** Reflects freight changes.

Finished Steel Composite

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

Pig Iron Composite

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo and Birmingham.

Steel Scrap Composite

Average of No. 1 heavy melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

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Cleveland Prices Lead Gains

Scrap prices in Cleveland and Youngstown lead market gains this week. The market rose $4 in Cleveland.

Generally, the market has a firmer tone this week. Many areas say domestic activity is still lacking; exports sustain.

■ Scrap prices in Ohio, especially around Cleveland and Youngstown, took big jumps this week leading the move toward a generally firmer market.

The Cleveland market went up another $4. The bulk of the lists were laid down for spring shipments overseas. In Youngstown, prices were up as much as $3 on some grades. In Cincinnati, prices rose less dramatically.

Firm and Steady—The overall market tone is firm and steady. The only area reporting any decline in prices this week is Detroit where the market settled after a flurry of industrial list buying last week.

Export activity continues to be the main source of movement around the country. Several key areas, such as New York and Philadelphia, still report only limited domestic buying. There is still bullishness at both dealer and broker levels in Pittsburgh, however.

The IRON AGE composite price for No. 1 heavy melting scrap remains unchanged at $31.17. The composite price for No. 2 bundles is also the same as last week—$21.50.

Pittsburgh—The market remains strong and tight. Early railroad lists indicate continued bullishness at broker and dealer levels. Higher prices in a nearby district are putting added pressure on the local supply. Brokers say it will take more money to move any significant tonnage locally. But the mills have not indicated they want scrap badly enough to pay higher prices. In the absence of any new buying, scrapmen caution against regarding the recent market rise as more than a correction.

Chicago—The market continues firm despite mill resistance. One purchaser did succeed in buying factory bundles at $35. Reportedly, however, delivery has been spread across a 60-day plus period, so the immediate effect on the market is questionable. A misprint in last week's issue quoted the price of low phos punchings and plate at $34 to $35. It should have been $36 to $37.

Philadelphia — The market, though showing definite signs of increased firmness, is in a transition period. Export demand and prices are still up, but domestic activity is limited. Some material is hard to get and those dealers with it are drawing premium prices. Some tonnage is being bought now for spring deliveries.

New York—The firmness that started to show up in this market last week was confirmed this week. This cancelled some of the fears that some dealers had that it was wholly due to the bad weather. Prices, while firm, are unchanged.

Detroit—The market is starting to settle back after a flurry of industrial list buying. Several grades dropped $1 a ton in price this week. A local mill took some previously ordered No. 1 bundles. It then stopped the order.

Cleveland—The market is up another $4 as the loss of production lists to export speculation has shorted the area. Bulk of the lists will be laid down in hopes of spring shipments overseas. Dealers are in business again as brokers in Cleveland are paying them $32 a ton to cover old No. 1 heavy melting orders.

Cincinnati—The market is up $1 based largely on out-of-area demand. Upriver mills will get most of the tonnage and local consumers can get small tonnage at the offered prices.

St. Louis—Further gains were registered by some prices in this area. Dealer resistance to the low prices is evident. However, the feeling is that the recent upturn is not a runaway. It is, instead, a general firming.

Birmingham — The market is showing more strength. A large Birmingham electric furnace raised its price for bundles and electric furnace scrap when it returned to the market this week. Some brokers raised prices for No. 1 heavy melting in anticipation of early buying.

Buffalo—Area mills are still not buying. The market for No. 1 heavy melting firmed slightly with some limited buying for export in the spring.

Boston—Export demand is still good, but domestic activity is quiet. The market is generally a bit firmer this week.

West Coast — Major mills are putting out feelers. There's talk that they might come back into the market by February or March. Exporting is eating up most of the scrap that's generated.

Houston—The domestic market is still quiet and export continues to provide an outlet for the available scrap. The cast market is in the doldrums, although some cast is being exported.

SCRAP PRICES *(Effective January 9, 1961)*

Iron and Steel Scrap

Going prices of iron and steel scrap as obtained in the trade by THE IRON AGE based on representative tonnages. All prices are per gross ton delivered to consumer unless otherwise noted.

Pittsburgh

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	30.00 to 31.00
No. 1 factory bundles	36.00 to 37.00
No. 2 bundles	23.00 to 24.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	13.00 to 14.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	17.00 to 18.00
Low phos. punch'gs plate	35.00 to 36.00
Heavy turnings	25.00 to 26.00
No. 1 RR hvy. melting	34.00 to 35.00
Scrap rails, random lgth.	43.00 to 44.00
Rails, 2 ft. and under	47.00 to 48.00
RR Specialties	38.00 to 39.00
No. 1 machinery cast.	44.00 to 45.00
Cupola cast.	35.00 to 36.00
Heavy breakable cast.	33.00 to 34.00
Stainless	
18-8 bundles and solids	175.00 to 180.00
18-8 turnings	95.00 to 100.00
430 bundles and solids	85.00 to 90.00
410 turnings	60.00 to 65.00

Chicago

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	27.00 to 28.00
No. 1 dealer bundles	30.00 to 31.00
No. 1 factory bundles	35.00 to 36.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	29.00 to 30.00
Machine shop turn.	14.00 to 15.00
Mixed bor. and turn.	16.00 to 17.00
Shoveling turnings	16.00 to 17.00
Cast iron borings	16.00 to 17.00
Low phos. forge crops	38.00 to 39.00
Low phos. punch'gs plate, ¼ in. and heavier	36.00 to 37.00
Low phos. 2 ft. and under	34.00 to 35.00
No. 1 RR hvy. melting	33.00 to 34.00
Scrap rails, random lgth.	41.00 to 42.00
Rerolling rails	53.00 to 55.00
Rails 2 ft. and under	46.00 to 47.00
Angles and splice bars	41.00 to 42.00
RR steel car axles	54.00 to 55.00
RR couplers and knuckles	38.00 to 39.00
No. 1 machinery cast.	44.00 to 45.00
Cupola cast.	39.00 to 40.00
Cast iron wheel	30.00 to 31.00
Malleable	43.00 to 44.00
Stove plate	34.00 to 35.00
Steel car wheels	38.00 to 39.00
Stainless	
18-8 bundles and solids	175.00 to 180.00
18-8 turnings	95.00 to 100.00
430 bundles and solids	90.00 to 95.00
430 turnings	55.00 to 60.00

Philadelphia Area

No. 1 hvy. melting	$34.00 to $35.00
No. 2 hvy. melting	30.00 to 31.00
No. 1 dealer bundles	35.00 to 36.00
No. 2 bundles	20.00 to 21.00
No. 1 busheling	35.00 to 36.00
Machine shop turn.	12.00 to 13.00
Mixed bor. short turn.	14.00 to 15.00
Cast iron borings	14.00 to 15.00
Shoveling turnings	18.00 to 19.00
Clean cast. chem. borings	23.00 to 24.00
Low phos. 5 ft and under	36.00 to 37.00
Low phos. 2 ft punch'gs	39.00 to 40.00
Elec. furnace bundles	35.00 to 36.00
Heavy turnings	25.00 to 26.00
RR specialties	37.00 to 38.00
Rails, 18 in. and under	47.00 to 49.00
Cupola cast.	36.00 to 37.00
Heavy breakable cast.	37.00 to 38.00
Cast iron car wheels	37.00 to 38.00
Malleable	45.00 to 46.00
No. 1 machinery cast.	47.00 to 48.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$24.50 to $25.50
No. 2 hvy. melting	22.50 to 23.50
No. 1 dealer bundles	24.50 to 25.50
No. 2 bundles	17.00 to 18.00
Machine shop turn.	9.00 to 10.00
Shoveling turnings	11.00 to 12.00
Cast iron borings	11.00 to 12.00
Low phos. 18 in. and under	33.00 to 34.00
Rails, random length	36.00 to 37.00
Rails, 18 in. and under	42.00 to 43.00
No. 1 cupola cast.	35.00 to 36.00
Heavy breakable cast.	28.00 to 29.00
Drop broken cast.	41.00 to 42.00

Youngstown

No. 1 hvy. melting	$32.00 to $33.00
No. 2 hvy. melting	21.00 to 22.00
No. 1 dealer bundles	32.00 to 33.00
No. 2 bundles	20.00 to 21.00
Machine shop turn.	13.00 to 14.00
Shoveling turnings	16.00 to 17.00
Low phos. plate	34.00 to 35.00

Cleveland

No. 1 hvy. melting	$29.50 to $30.50
No. 2 hvy. melting	17.00 to 18.00
No. 1 dealer bundles	29.50 to 30.50
No. 1 factory bundles	32.50 to 33.50
No. 2 bundles	19.00 to 20.00
No. 1 busheling	29.50 to 30.50
Machine shop turn.	10.00 to 11.00
Mixed bor. and turn.	13.00 to 14.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	13.00 to 14.00
Cut structural & plates, 2 ft & under	35.00 to 36.00
Low phos. punch'gs plate	29.50 to 30.50
Drop forge flashings	29.50 to 30.50
Foundry steel, 2 ft. & under	31.00 to 32.00
No. 1 RR hvy. melting	32.00 to 33.00
Rails 2 ft. and under	45.00 to 46.00
Rails 18 in. and under	46.00 to 47.00
Steel axle turnings	23.00 to 24.00
Railroad cast.	45.00 to 46.00
No. 1 machinery cast.	45.00 to 46.00
Stove plate	39.00 to 40.00
Malleable	44.00 to 45.00
Stainless	
18-8 bundles	160.00 to 165.00
18-8 turnings	80.00 to 90.00
430 bundles	75.00 to 80.00

Buffalo

No. 1 hvy. melting	$23.00 to $24.00
No. 2 hvy. melting	20.00 to 21.00
No. 1 busheling	23.00 to 24.00
No. 1 dealer bundles	23.00 to 24.00
No. 2 bundles	17.00 to 18.00
Machine shop turn.	9.00 to 10.00
Mixed bor. and turn.	10.00 to 11.00
Shoveling turnings	13.00 to 14.00
Cast iron borings	11.00 to 12.00
Low phos. plate	31.00 to 32.00
Structurals and plate, 2 ft. and under	33.00 to 34.00
Scrap rails, random lgth.	32.00 to 33.00
Rails 2 ft. and under	42.00 to 43.00
No. 1 machinery cast.	42.00 to 43.00
No. 1 cupola cast.	36.00 to 37.00

St. Louis

No. 1 hvy. melting	$28.00 to $29.00
No. 2 hvy. melting	25.00 to 26.00
Foundry steel, 2 ft.	28.00 to 29.00
No. 1 dealer bundles	28.00 to 29.00
No. 2 bundles	19.00 to 20.00
Machine shop turn.	7.00 to 8.00
Shoveling turnings	9.00 to 10.00
Cast iron borings	16.00 to 17.00
No. 1 RR hvy. melting	30.00 to 31.00
Rails, random lengths	36.00 to 37.00
Rails, 18 in. and under	38.00 to 39.00
RR specialties	36.00 to 37.00
Cupola cast.	38.00 to 39.00
Heavy breakable cast.	31.00 to 32.00
Stove plate	34.00 to 35.00
Cast iron car wheels	33.00 to 34.00
Rerolling rails	49.00 to 50.00
Unstripped motor blocks	33.00 to 34.00

Birmingham

No. 1 hvy. melting	$30.00 to $31.00
No. 2 hvy. melting	24.00 to 25.00
No. 1 dealer bundles	30.00 to 31.00
No. 2 bundles	19.00 to 20.00
No. 1 busheling	31.00 to 32.00
Machine shop turn.	16.00 to 17.00
Shoveling turnings	18.00 to 19.00
Cast iron borings	9.00 to 10.00
Electric furnace bundles	34.00 to 35.00
Elec. furnace, 3 ft. & under	34.00 to 35.00
Bar crops and plate	38.00 to 39.00
Structural and plate, 2 ft.	37.00 to 38.00
No. 1 RR hvy. melting	32.00 to 33.00
Scrap rail, random lgth.	37.00 to 38.00
Rails, 18 in. and under	44.00 to 45.00
Angles and splice bars	36.00 to 37.00
No. 1 cupola cast.	45.00 to 46.00
Stove plate	45.00 to 46.00
Cast iron car wheels	33.00 to 34.00
Unstripped motor blocks	32.00 to 33.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$27.00 to $28.00
No. 2 hvy. melting	20.00 to 21.00
No. 2 dealer bundles	15.00 to 16.00
Machine shop turnings	2.00 to 3.00
Mixed bor. and turn.	3.00 to 4.00
Shoveling turnings	5.00 to 6.00
Clean cast. chem. borings	17.00 to 18.00
No. 1 machinery cast.	36.00 to 37.00
Mixed yard cast.	32.00 to 33.00
Heavy breakable cast.	30.00 to 31.00
Stainless	
18-8 prepared solids	160.00 to 165.00
18-8 turnings	80.00 to 85.00
430 prepared solids	70.00 to 75.00
430 turnings	20.00 to 25.00

Detroit

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$22.00 to $23.00
No. 2 hvy. melting	19.00 to 20.00
No. 1 dealer bundles	26.00 to 27.00
No. 2 bundles	19.00 to 20.00
No. 1 busheling	22.00 to 23.00
Drop forge flashings	22.00 to 23.00
Machine shop turn.	7.00 to 8.00
Mixed bor. and turn.	11.00 to 12.00
Shoveling turnings	11.00 to 12.00
Cast iron borings	11.00 to 12.00
Heavy breakable cast.	25.00 to 26.00
Mixed cupola cast.	31.00 to 32.00
Automotive cast.	35.00 to 36.00
Stainless	
18-8 bundles and solids	145.00 to 150.00
18-8 turnings	45.00 to 50.00
430 bundles and solids	50.00 to 55.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$23.00 to $24.00
No. 2 hvy. melting	18.00 to 19.00
No. 1 dealer bundles	23.00 to 24.00
No. 2 bundles	12.00 to 13.00
No. 1 busheling	24.00 to 25.00
Machine shop turn.	3.50 to 4.50
Shoveling turnings	6.00 to 7.00
Clean cast. chem. borings	11.00 to 12.00
No. 1 machinery cast.	37.00 to 38.00
Mixed cupola cast.	29.00 to 30.00
Heavy breakable cast.	25.50 to 26.50

San Francisco

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	29.00
No. 1 dealer bundles	$27.00 to 28.00
No. 2 bundles	18.00
Machine shop turn.	14.00
Cast iron borings	14.00
No. 1 cupola cast.	46.00 to 48.00

Los Angeles

No. 1 hvy. melting	$29.00 to $30.00
No. 2 hvy. melting	26.00 to 27.00
No. 1 dealer bundles	24.00 to 25.00
No. 2 bundles	17.00
Machine shop turn.	12.00
Shoveling turnings	13.00
Cast iron borings	13.00
Elec. furnace 1 ft. and under (foundry)	42.00
No. 1 cupola cast.	39.00

Seattle

No. 1 hvy. melting	$33.00
No. 2 hvy. melting	31.00
No. 2 bundles	21.00
No. 1 cupola cast.	36.00
Mixed yard cast.	31.00

Hamilton, Ont

Brokers buying prices per net ton on cars:

No. 1 hvy. melting	$24.00
No. 2 hvy. melting cut 3 ft. and under	20.50
No. 1 dealer bundles	24.00
No. 2 bundles	17.00
Mixed steel scrap	16.00
Bush., new fact. prep'd	23.00
Bush., new fact. unprep'd	18.00
Machine shop turn.	8.00
Short steel turn.	12.00
Mixed bor. and turn.	12.00
Cast scrap	30.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$32.00
No. 2 hvy. melting	29.00
No. 2 bundles	20.50
Machine shop turn.	8.00
Shoveling turnings	11.00
Cut structural plate 2 ft. & under	$40.00 to 41.00
Unstripped motor blocks	26.00 to 27.00
Cupola cast.	33.00 to 34.00
Heavy breakable cast.	25.00 to 26.00

Zinc Thrown Into Price Confusion

The zinc industry is without a firm price it can quote to its customers.

Sellers are offering a discount off the "average" price for the month. But none will set a price on which to base the average.

■ The domestic zinc market, which drifted so quietly through most of 1960, has opened 1961 with a bang. Enough confusion and problems have been generated during the first few business days of the year to keep things stirred up for several months.

Here's the situation in a nutshell:

By the end of the first week of the year no domestic source was quoting a firm price for zinc. And no one showed the slightest inclination to be the first to do so.

No Firm Price — All are — or were—offering a discount under the average price of zinc for the month, which is set by E&MJ. The first one to set a firm price would, of course, be undersold by everyone else because of the discount.

But no one has been able to explain how they expected an average to be struck for January if no one is quoting a firm price.

What Happened—Here's how the situation developed:

On the first business day of 1961, St. Joseph Lead Co. sent this notice to its customers: "A number of customers have recently informed the St. Joseph Lead Co. that zinc of domestic origin is readily available at varying discounts below the quoted E&MJ E. St. Louis price.

"Therefore, effective January 1, and until further notice, or until these market practices are discontinued, the St. Joseph Lead Co. will sell slab zinc of all grades and to all of its customers on the basis of the quoted E&MJ E. St. Louis price for prime western zinc less a discount of ½¢ per lb."

One zinc executive points out that it is not uncommon for importers and speculators to shave prices here and there.

Fall in Line—In this particular case, mostly the smaller U. S. smelters were discounting. But they were offering varying discounts to different customers.

St. Joseph accounts for about 15 pct of the domestic market, so other major smelters had little choice but to meet the discount.

Although the St. Joseph statement says "until further notice," a spokesman said that the decision on whether or not to offer a discount would be made month-by-month.

Havoc and Confusion—He also said that the company realized the havoc its move would cause. "We wanted to bring this discounting problem out into the open," he said.

Apparently, the company's customers are pleased with the move. It enables them to maintain normal supply channels without worrying about missing out on a better price from other sources.

But another major zinc seller says his customers are just confused, and that they don't particularly like the situation. He did admit that St. Joseph had cause for kicking up the storm.

Industry Subsidy—The question of a subsidy for lead and zinc producers has already been reintroduced into the House and will be soon in the Senate. It's the same bill that was vetoed after being passed in the last session.

It would provide a subsidy for domestic producers of less than 2000 tons each annually of lead and zinc when the zinc price drops under 14.5¢ and lead falls below 17¢.

Backers say President-elect Kennedy is committed to signing it if it passes Congress. But two Congressmen from the largest lead-zinc districts in the U. S. have suggested that a subsidy is not the best way to solve the domestic industry's problems.

Tin prices for the week: Jan. 3—101.00; Jan. 4—100.625; Jan. 5—101.75; Jan. 6—100.625; Jan. 9—100.50*.

*Estimate.

Monthly Average Metal Prices

(Cents per lb except as noted)

Average prices of the major nonferrous metals in DECEMBER based on quotations appearing in THE IRON AGE, were as follows:

Electrolytic copper, del'd Conn. Valley	30.00
Copper, Lake	30.00
Straits, Tin, New York	101.66
Zinc, F. St. Louis	12.48
Lead, St. Louis	11.18
Aluminum ingot	26.00

Note: Quotations are on going prices

Primary Prices

(cents per lb)	current price	last price	date of change
Aluminum Ingot	26.00	24.70	12/17/59
Copper (E)	30.00	33.00	10/11/60
Copper (CS)	30.00	31.00	10/13/60
Copper (L)	30.00	33.00	10/13/60
Lead, St. L.	10.80	11.80	12/13/60
Lead, N. Y.	11.00	12.00	12/13/60
Magnesium Ingot	36.00	34.50	8/13/58
Magnesium pig	35.25	33.75	8/13/58
Nickel	74.00	64.50	12/8/58
Titanium sponge	150-160	162-182	8/1/59
Zinc, E. St. L.	See above	12.50	1/6/61
Zinc, N. Y.	See above	13.00	1/6/61

ALUMINUM: 99% Ingot COPPER: (E) = electrolytic, (CS) = custom smelters, electrolytic. (L) = lake. LEAD: common grade. MAGNESIUM: 99.8% pig Velasco, Tex. NICKEL: Port Colborne, Canada. ZINC: prime western. Other primary prices, pg. 95.

NONFERROUS PRICES

MILL PRODUCTS

(Cents per lb unless otherwise noted)

ALUMINUM

(Base 30,000 lb, f.o.b. customer's plant)

Flat Sheet (Mill Finish and Plate)

("F" temper except 6061-0)

Alloy	.030-.038	.048-.061	.077-.096	.136-.250
1100, 3003	48.4	47.4	46.4	45.4
5052	55.8	53.0	50.8	49.2
6061-0	53.0	50.3	48.4	47.0

Extruded Solid Shapes

Factor	6063 T-5	6062 T-6
1-17	45.3-46.8	54.0-61.8
18-32	45.8-47.5	58.6-81.5
33-38	49.5-52.2	85.1-96.6
39-44	59.8-63.6	102.0-124.0

Screw Machine Stock—2011-T-3

Size"	7/32-5/16	11/32-23/32	3/4-1 1/16	1 3/32-1 3/8
Price	60.0	59.2	57.7	55.3

Roofing Sheet, Corrugated

(Per sheet, 26" wide base, 16,000 lb)

Length"→	72	96	120	144
.019 gage	$1.506	$2.013	$2.515	$3.017

MAGNESIUM

(F.o.b. shipping pt., carload frt. allowed)

Sheet and Plate

Type↓ Gage→	.250 3.00	.250-2.00	.188	.081	.032
AZ31B Stand. Grade	.....	67.9	69.0	77.9	103.1
AZ31B Spec.	.....	93.3	96.9	108.7	171.3
Tread Plate	.....	70.6	71.7	.....	.....
Tooling Plate	73.0	.....	.....	.....	.....

Extruded Shapes

factor→	6-8	12-14	24-26	36-38
Comm. Grade. (AZ31C)	65.3	65.3	66.1	71.5
Spec. Grade... (AZ31B)	84.6	85.7	90.6	104.2

Alloy Ingot

AZ91B (Die Casting)..... 37.25 (delivered)
AZ63A, AZ92A, AZ91C (Sand Casting) 40.75 (Velasco, Tex.)

NICKEL, MONEL, INCONEL

(Base prices f.o.b. mill)

	"A" Nickel	Monel	Inconel
Sheet, CR	138	120	138
Strip, CR	124	108	138
Rod, bar, HR	107	89	109
Angles, HR	107	89	109
Plates, HR	130	110	126
Seamless tube	157	129	200
Shot, blocks	...	87	...

COPPER, BRASS, BRONZE

(Freight included in 5000 lbs)

	Sheet	Wire	Rod	Tube
Copper	55.13	.....	52.36	56.32
Brass, Yellow	49.27	49.56	49.21	53.43
Brass, Low	51.75	52.04	51.69	55.81
Brass, Red	52.62	52.91	52.56	56.68
Brass, Naval	54.08	60.39	47.89	58.24
Munts Metal	52.14	.....	47.45	.....
Comm. Bz.	54.03	54.32	53.97	57.84
Mang. Bz.	57.82	.....	51.42	.....
Phos. Bz. 5%	75.70	75.70	76.20	77.63

Free Cutting Brass Rod..... 34.88

TITANIUM

(Base Prices f.o.b. mill)

Sheet and strip, commercially pure, $6.75-$13.00; alloy, $13.40-$17.00. Plate, HR, commercially pure, $5.25-$9.00; alloy, $8.00-$10.00. Wire, rolled and/or drawn, commercially pure, $5.55-$6.05; alloy, $5.55-$9.00; bar, HR or forged, commercially pure, $4.00-$4.50; alloy, $4.00-$6.25; billets, HR, commercially pure, $3.20-$3.70; alloy, $3.20-$4.75.

PRIMARY METAL

(Cents per lb unless otherwise noted)

Antimony, American, Laredo, Tex.. 29.50
Beryllium Aluminum 5% Be, Dollars per lb contained Be $65.00
Beryllium copper, per lb conta'd Be. $43.00
Beryllium 97% lump or beads, f.o.b. Cleveland, Reading $70.00
Bismuth, ton lots ..... $ 2.25
Cadmium, del'd ..... $ 1.50
Calcium, 99.9% small lots ..... $ 4.55
Chromium, 99.8% metallic base.... $ 1.31
Cobalt, 97-99% (per lb) .... $1.50 to $ 1.57
Germanium, per gm, f.o.b. Miami, Okla., refined ..... $29.95 to $36.95
Gold, U. S. Treas., per troy oz..... $35.00
Indium, 99.9% dollars per troy oz.. $ 2.25
Iridium, dollars per troy oz..... $75 to $85
Lithium, 98% ..... $9.00 to $12.00
Magnesium sticks, 10,000 lb. 57.00
Mercury, dollars per 76-lb flask f.o.b. New York ..... $208 to $210
Nickel oxide sinter at Buffalo, N. Y., or other U. S. points of entry, contained nickel 69.60
Palladium, dollars per troy oz... $24 to $26
Platinum, dollars per troy oz... $82 to $85
Rhodium ..... $137 to $140
Silver ingots (¢ per troy oz.)..... 91.375
Thorium, per kg $43.00
Vanadium ..... $ 3.65
Zirconium sponge ..... $ 5.00

REMELTED METALS

Brass Ingot

(Cents per lb delivered, carloads)

85-5-5 ingot
No. 115 ..... 28.25
No. 120 ..... 27.25
No. 123 ..... 26.25
80-10-10 ingot
No. 305 ..... 32.75
No. 315 ..... 30.50
88-10-2 ingot
No. 210 ..... 40.50
No. 215 ..... 37.25
No. 245 ..... 32.50
Yellow ingot
No. 405 ..... 23.50
Manganese bronze
No. 421 ..... 27.50

Aluminum Ingot

(Cents per lb del'd 30,000 lb and over)

95-5 aluminum-silicon alloys
0.30 copper max. 24.25-24.50
0.60 copper max. 24.00-24.25
Piston alloys (No. 132 type)..26.00-27.00
No. 12 alum. (No. 2 grade)...22.75-23.25
108 alloy 23.25-23.75
195 alloy 25.75-26.75
13 alloy (0.60 copper max.)...24.00-24.25
AXS-679 (1 pct zinc) 23.00-24.00

(Effective Jan. 9, 1961)

Steel deoxidizing aluminum notch bar granulated or shot

Grade 1—95-87½% 23.75-24.75
Grade 2—92-95% 22.50-23.50
Grade 3—90-92% 21.50-22.50
Grade 4—85-90% 21.00-22.00

SCRAP METAL

Brass Mill Scrap

(Cents per pound, add 1¢ per lb for shipments of 20,000 lb and over)

	Heavy	Turnings
Copper	26	25¼
Yellow brass	20⅜	18⅝
Red brass	23¼	22½
Comm. bronze	24	23¼
Mang. bronze	19⅛	18⅜
Free cutting rod ends.	19⅝	

Customs Smelters Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 24¼
No. 2 copper wire 22¾
Light copper 20
*Refining brass 21
Copper bearing material 20
*Dry copper content.

Ingot Makers Scrap

(Cents per pound carload lots, delivered to refinery)

No. 1 copper wire 24¼
No. 2 copper wire 22¾
Light copper 20½
No. 1 composition 20
No. 1 comp. turnings 19
Hvy. yellow brass solids 15¼
Brass pipe 14½
Radiators 16

Aluminum

Mixed old cast. ..... 11½—12
Mixed new clips ..... 13½—14
Mixed turnings, dry ..... 12½—13

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Copper and Brass

No. 1 copper wire ..... 21½—22
No. 2 copper wire ..... 19½—20
Light copper ..... 17½—18
Auto radiators (unsweated).. 12¼—12¾
No. 1 composition ..... 16½—17
No. 1 composition turnings... 15½—16
Cocks and faucets ..... 12¾—13
Clean heavy yellow brass ... 12 —12¼
Brass pipe ..... 13 —13½
New soft brass clippings .... 13 —13½
No. 1 brass rod turnings .... 12½—13

Aluminum

Alum. pistons and struts .... 6½— 7
Aluminum crankcase ..... 8½— 9
1100 (Ss) aluminum clippings 11½—12
Old sheet and utensils ..... 8½— 9
Borings and turnings ..... 4½— 5
Industrial castings ..... 9 — 9½
2020 (24s) clippings ..... 10 —10½

Zinc

New zinc clippings ..... 6 — 6¼
Old zinc ..... 3 — 3½
Zinc routings ..... 2 — 2¼
Old die cast scrap ..... 1¼— 1½

Nickel and Monel

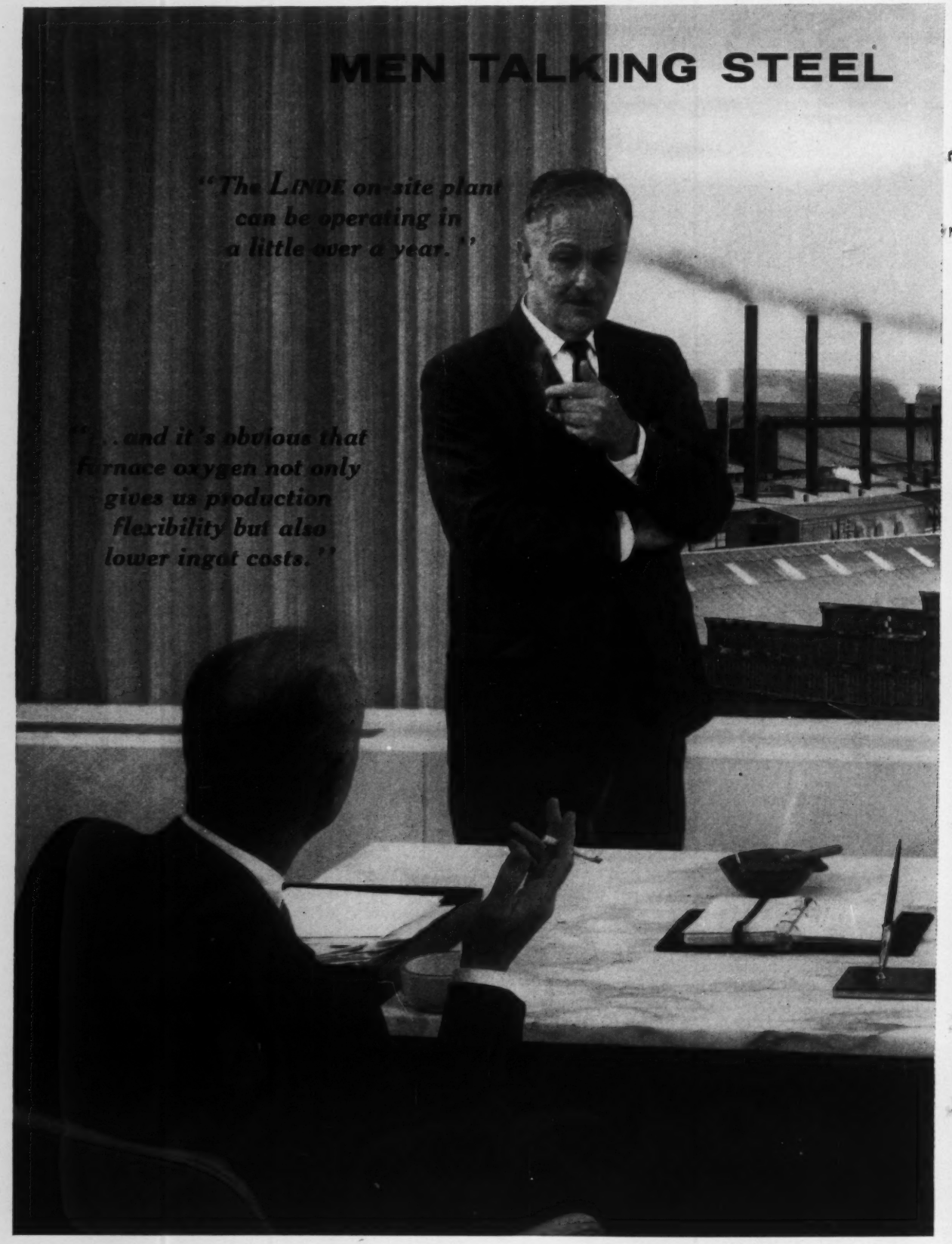
Pure nickel clippings 52-54
Clean nickel turnings 40
Nickel anodes 52-54
Nickel rod ends 52-54
New Monel clippings 23-23.50
Clean Monel turnings 16.50-17
Old sheet Monel 22-23
Nickel silver clippings, mixed. 18
Nickel silver turnings, mixed. 15

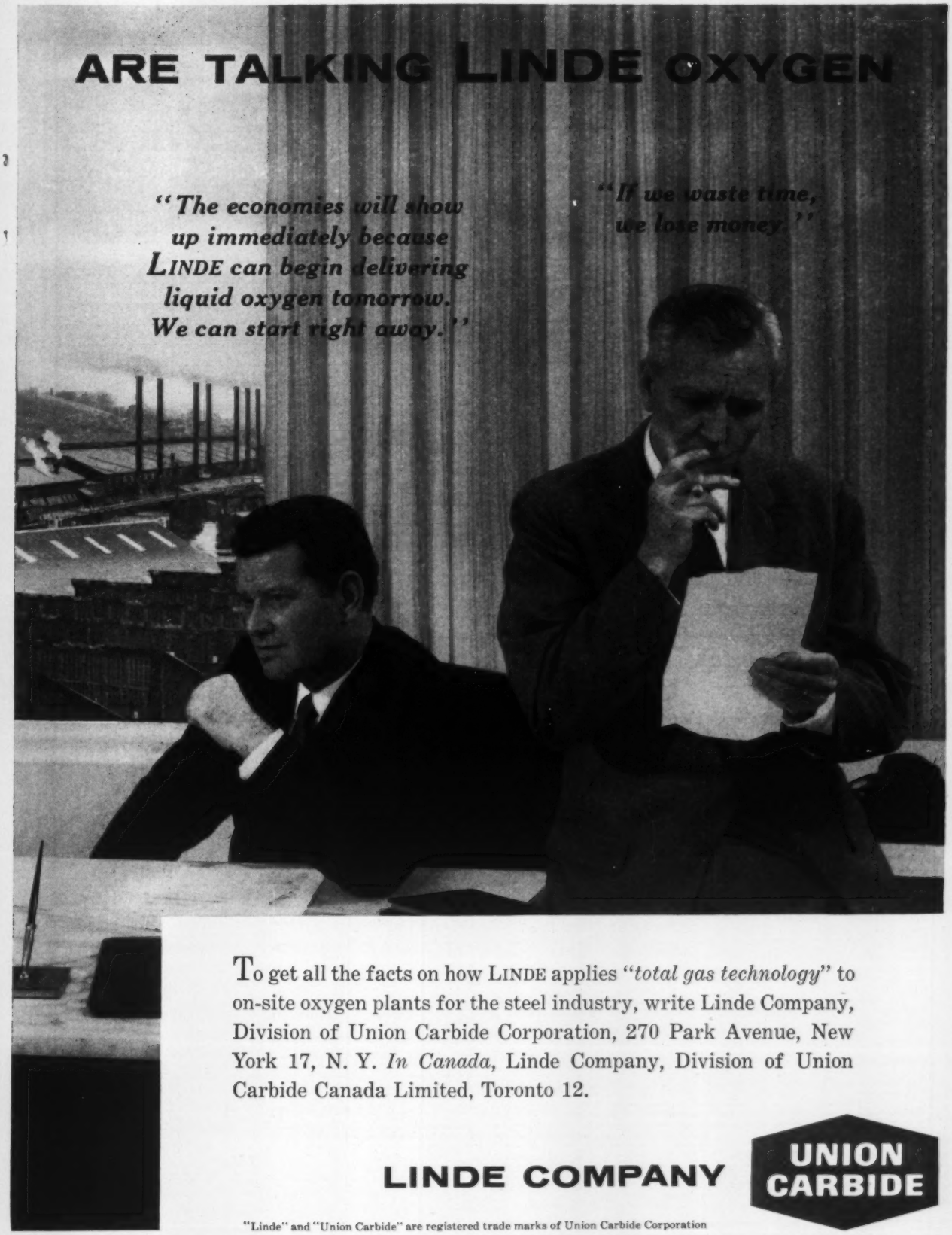
Lead

Soft scrap lead ..... 7 — 7½
Battery plates (dry) ..... 3 — 3¼
Batteries, acid free ..... 2 — 2¼

Miscellaneous

Block tin ..... 75 —77
No. 1 pewter ..... 57.50—58
Auto babbitt ..... 43 —44
Mixed common babbitt ..... 10 —10½
Solder joints ..... 13½—14
Small foundry type ..... 9 — 9½
Monotype ..... 9 — 9½
Lino. and stereotype ..... 8 — 8¼
Electrotype ..... 7½— 7¾
Hand picked type shells ..... 5¼— 5¾
Lino. and stereo. dross ..... 2 — 2½
Electro dross ..... 2¼— 2¾


MEN TALKING STEEL
"The LINDE on-site plant can be operating in a little over a year."
"...and it's obvious that furnace oxygen not only gives us production flexibility but also lower ingot costs."


ARE TALKING LINDE OXYGEN
"The economies will show up immediately because LINDE can begin delivering liquid oxygen tomorrow. We can start right away."
"If we waste time, we lose money"

To get all the facts on how LINDE applies "*total gas technology*" to on-site oxygen plants for the steel industry, write Linde Company, Division of Union Carbide Corporation, 270 Park Avenue, New York 17, N. Y. *In Canada*, Linde Company, Division of Union Carbide Canada Limited, Toronto 12.

LINDE COMPANY

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STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BILLETS, BLOOMS, SLABS			PILING	SHAPES, STRUCTURALS			STRIP					
		Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton	Sheet Steel	Carbon	Hi Str. Low Alloy	Carbon Wide-Flange	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy	Alloy Hot-rolled	Alloy Cold-rolled
EAST	Bethlehem, Pa.			$119.00 *B3*		5.55 *B3*	8.10 *B3*	5.55 *B5*						
	Buffalo, N. Y.	$80.00 *R3, B3*	$99.50 *R3, B3*	$119.00 *R3, B3*	6.50 *B3*	5.55 *B3*	8.10 *B3*	5.55 *B3*	5.10 *B3,*	7.425 *S10, R7*	7.575 *B3*			
	Phila., Pa.									7.875 *P15*				
	Harrison, N. J.													15.55 *C11*
	Conshohocken, Pa.		$104.50 *A2*	$126.00 *A2*					5.15 *A2*		7.575 *A2*			
	New Bedford, Mass.									7.875 *R6*				
	Johnstown, Pa.	$80.00 *B3*	$99.50 *B3*	$119.00 *B3*		5.55 *B3*	8.10 *B3*							
	Boston, Mass.									7.975 *T8*				15.90 *T8*
	New Haven, Conn.									7.875 *D1*				
	Baltimore, Md.									7.425 *T8*				15.90 *T8*
	Phoenixville, Pa.					5.55 *P2*		5.55 *P2*						
	Sparrows Pt., Md.								5.10 *B3*		7.575 *B3*			
	New Britain, Wallingford, Conn.			$119.00 *N8*						7.875 *W1,S7*				
	Pawtucket, R. I. Worcester, Mass.									7.975 *N7, A5*				15.90 *N7* 15.70 *T8*
MIDDLE WEST	Alton, Ill.								5.30 *L1*					
	Ashland, Ky.								5.10 *A7*		7.575 *A7*			
	Canton-Massillon, Dover, Ohio		$102.00 *R3*	$119.00 *R3, T5*						7.425 *G4*		10.80 *G4*		
	Chicago, Franklin Park, Evanston, Ill.	$80.00 *U1, R3*	$99.50 *U1, R3,W8*	$119.00 *U1, R3,W8*	6.50 *U1*	5.50 *U1, W8,P13*	8.05 *U1, Y1,W8*	5.50 *U1*	5.10 *W8, N4,A1*	7.525 *A1,T8, M8* 7.525* *M8*	7.575 *W8*		8.40 *W8, S9,13*	15.55 *A1, S9,G4,T8*
	Cleveland, Ohio									7.425 *A5,J3*		10.75 *A5*	8.40 *J3*	15.60 *N7*
	Detroit, Mich.			$119.00 *R5*					5.10 *G3, M2*	7.425 *M2, S1, D1, P11, B9*	7.575 *G3*	10.80 *S1*		
	Anderson, Ind.									7.425 *G4*				
	Gary, Ind. Harbor, Indiana	$80.00 *U1*	$99.50 *U1*	$119.00 *U1, Y1*		5.50 *U1, I3*	8.05 *U1, J3*	5.50 *I3*	5.10 *U1, I3,Y1*	7.425 *Y1*	7.575 *U1, I3,Y1*	10.90 *Y1*	8.40 *U1, Y1*	
	Sterling, Ill.	$80.00 *N4*				5.50 *N4*	7.75 *N4*	5.50 *N4*	5.20 *N4*					
	Indianapolis, Ind.									7.575 *R5*				15.70 *R5*
	Newport, Ky.								5.10 *A9*				8.40 *A9*	
	Niles, Warren, Ohio Sharon, Pa.		$99.50 *S1, C10*	$119.00 *C10,S1*					5.10 *R3, S1*	7.425 *R3, T4,S1*	7.575 *R3, S1*	10.80 *R3, S1*	8.40 *S1*	15.55 *S1*
	Owensboro, Ky.	$80.00 *G5*	$99.50 *G5*	$119.00 *G5*										
	Pittsburgh Midland Butler Aliquippa N. Castle McKeesport Pa.	$80.00 *U1, P6*	$99.50 *U1, C11,P6*	$119.00 *U1, C11,B7*	6.50 *U1*	5.50 *U1, J3*	8.05 *U1, J3*	5.50 *U1*	5.10 *P6*	7.425 *J3, B4, M10* 7.525 *E3*			8.40 *S9*	15.55 *S9* 15.60 *N7*
	Weirton, Wheeling, Follansbee, W. Va.				6.50 *U1, W3*	5.50 *W3*		5.50 *W3*	5.10 *W3*	7.425 *W5*	7.575 *W3*	10.80 *W3*		
	Youngstown, Ohio	$80.00 *R3*	$99.50 *Y1, C10*	$119.00 *Y1*			8.05 *Y1*		5.10 *U*	7.425 *Y1,R5*	7.575 *U1, Y1*	10.95 *Y1*	8.40 *U1, Y1*	15.55 *R5, Y1*
WEST	Fontana, Cal.	$90.50 *K1*	$109.00 *K1*	$140.00 *K1*		6.30 *K1*	8.85 *K1*	6.45 *K1*	5.825 *K1*	9.20 *K1*				
	Geneva, Utah		$99.50 *C7*			5.50 *C7*	8.05 *C7*							
	Kansas City, Mo.					5.60 *S2*	8.15 *S2*						8.65 *S2*	
	Los Angeles, Torrance, Cal.		$109.00 *B2*	$139.00 *B2*		6.20 *C7, B2*	8.75 *B2*		5.85 *C7, B2*	9.30 *C1,R5*			9.60 *B2*	17.75 *J3*
	Minnequa, Colo.					5.80 *C6*			6.20 *C6*	9.375 *C6*				
	Portland, Ore.					6.25 *O2*								
	San Francisco, Niles, Pittsburg, Cal.		$109.00 *B2*			6.15 *B2*	8.70 *B2*		5.85 *C7, B2*					
	Seattle, Wash.		$109.00 *B2*	$140.00 *B2*		6.25 *B2*	8.80 *B2*		6.10 *B2*					
SOUTH	Atlanta, Ga.					5.70 *A8*			5.10 *A8*					
	Fairfield, City, Ala. Birmingham, Ala.	$80.00 *T2*	$99.50 *T2*			5.50 *T2 R3,C16*	8.05 *T2*		5.10 *T2, R3,C16*		7.575 *T2*			
	Houston, Lone Star, Texas		$104.50 *S2*	$124.00 *S2*		5.60 *S2*	8.15 *S2*						8.65 *S2*	

* Electro-galvanized-plus galvanizing extras.

(Effective Jan. 9, 1961)

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		SHEETS								WIRE ROD	TINPLATE†		
		Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized (Hot-dipped)	Enameling	Long Terne	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.		Cokes* 1.25-lb. base box	Electro** 0.25-lb. base box	Thin 0.25 lb. coating in coils
EAST	Buffalo, N. Y.	5.10 *B3*	6.275 *B3*				7.525 *B3*	9.275 *B3*		6.40 *W6*	† Special coated mfg. terne deduct 35c from 1.25-lb. coke base box price. 0.75 lb. 0.25 lb. add 55c. Can-making quality BLACKPLATE 55 to 128 lb. deduct $2.20 from 1.25 lb. coke base box. * COKES: 1.50-lb. add 25c. **ELECTRO: 0.50-lb. add 25c; 0.75-lb. add 65c; 1.00-lb. add $1.00. Differential 1.00 lb. 0.25 lb. add 65c.		Prices are for 50 lb. base box for 45 lb. deduct 15¢; for 55 lb. add 15¢; for 60 lb. add 30¢.
	Claymont, Del.												
	Coatesville, Pa.												
	Conshohocken, Pa.	5.15 *A2*	6.325 *A2*				7.575 *A2*						
	Harrisburg, Pa.												
	Hartford, Conn.												
	Johnstown, Pa.									6.40 *B3*			
	Fairless, Pa.	5.15 *U1*	6.325 *U1*				7.575 *U1*	9.325 *U1*				$9.20 *U1*	$6.35 *U1*
	New Haven, Conn.												
	Phoenixville, Pa.												
	Sparrows Pt., Md.	5.10 *B3*	6.275 *B3*	6.875 *B3*	6.775 *B3*		7.525 *B3*	9.275 *B3*	10.025 *B3*	6.50 *B3*	$10.40 *B3*	$9.10 *B3*	6.25 *B3*
	Worcester, Mass.									6.70 *A5*			
MIDDLE WEST	Alton, Ill.									6.60 *L1*			
	Ashland, Ky.	5.10 *A7*		6.875 *A7*	6.775 *A7*		7.525 *A7*				Holloware Enameling 29 ga.—7.85 *U1* at Gary; Pittsburgh; *J3* at Aliquippa; *W5* at Yorkville; *Y1* at Indiana Harbor; *W5* at Wheeling; 7.95 *G2* at Granite City.		
	Canton-Massillon, Dover, Ohio			6.875 *R1, R3*									
	Chicago, Joliet, Ill.	5.10 *W8, A1*					7.525 *U1, W8*			6.40 *A5, R3, W8*			
	Sterling, Ill.									6.50 *N4, K2*			
	Cleveland, Ohio	5.10 *R3, J3*	6.275 *R3, J3*	7.65 *R3**	6.775 *R3*		7.525 *R3, J3*	9.275 *R3, J3*		6.40 *A5*			
	Detroit, Mich.	5.10 *G3, M2*	6.275 *G3, M2*				7.525 *G3*	9.275 *G3*					
	Newport, Ky.	5.10 *A9*	6.275 *A9*										
	Gary, Ind. Harbor, Indiana	5.10 *U1, I3, Y1*	6.275 *U1, I3, Y1*	6.875 *U1, I3*	6.775 *U1, I3, Y1*	7.225 *U1*	7.525 *U1, Y1, I3*	9.275 *U1, Y1*		6.40 *Y1*	$10.40 *U1, Y1*	$9.10 *I3, U1, Y1*	$6.25 *U1*
	Granite City, Ill.	5.20 *G2*	6.375 *G2*	6.975 *G2*								$9.20 *G2*	
	Kokomo, Ind.			6.975 *C9*						6.50 *C9*			
	Mansfield, Ohio	5.10 *E2*	6.275 *E2*			7.225 *E2*							
	Middletown, Ohio		6.275 *A7*	6.875 *A7*	6.775 *A7*	7.225 *A7*							
	Niles, Warren, Ohio Sharon, Pa.	5.10 *R3, S1*	6.275 *R3*	6.875 *R3* 7.65 *R3**	6.775 *S1*	7.225 *S1†† R3*	7.525 *R3, S1*	9.275 *R3*				$9.10 *R3*	
	Pittsburgh, Midland, Butler, Aliquippa, McKeesport Pa.	5.10 *U1, J3, P6*	6.275 *U1, J3, P6*	6.875 *U1, J3* 7.50 *E3**	6.775 *U1*		7.525 *U1, J3*	9.275 *U1, J3*	10.025 *U1, J3*	6.40 *A5, J3, P6*	$10.40 *U1, J3*	$9.10 *U1, J3*	$6.25 *U1*
	Portsmouth, Ohio	5.10 *P7*	6.275 *P7*							6.40 *P7*			
	Weirton, Wheeling, Follansbee, W. Va.	5.10 *W3, W5*	6.275 *W3, F3, W5*	6.875 *W3, W5* 7.50 *W3**		7.225 *W3, W5*	7.525 *W3*	9.275 *W3*			$10.40 *W5, W3*	$9.10 *W5, W3*	
	Youngstown, Ohio	5.10 *U1, Y1*	6.275 *Y1*		6.775 *Y1*		7.525 *Y1*	9.275 *Y1*		6.40 *Y1*			
WEST	Fontana, Cal.	5.825 *K1*	7.40 *K1*				8.25 *K1*	10.40 *K1*			$11.05 *K1*	$9.75 *K1*	
	Geneva, Utah	5.20 *C7*											
	Kansas City, Mo.									6.65 *S2*			
	Los Angeles, Torrance, Cal.									7.20 *B2*			
	Minnequa, Colo.									6.65 *C6*			
	San Francisco, Niles, Pittsburg, Cal.	5.80 *C7*	7.225 *C7*	7.625 *C7*						7.20 *C7*	$11.05 *C7*	$9.75 *C7*	
SOUTH	Atlanta, Ga.												
	Fairfield, Ala. Alabama City, Ala.	5.10 *T2, R3*	6.275 *T2, R3*	6.875 *T2, R3*	6.775 *T2*					6.40 *T2, R3*	$10.50 *T2*	$9.20 *T2*	$6.35 *T2*
	Houston, Texas									6.65 *S2*			

* Electrogalvanized sheets.

(Effective Jan. 9, 1961)

†† 7.425 at Sharon; Niles is 7.225.

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon† Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				6.725 *B3*	9.025 *B3*	8.30 *B3*					
	Buffalo, N. Y.	5.675 *R3,B3*	5.675 *R3,B3*	7.70 *B5*	6.725 *B3,R3*	9.025 *B3,B5*	8.30 *B3*	5.30 *B3*				8.00 *W6*
	Claymont, Del.							5.30 *P2*		7.50 *P2*	7.95 *P2*	
	Coatesville, Pa.							5.30 *L4*		7.50 *L4*	7.95 *L4*	
	Conshohocken, Pa.							5.30 *A2*	6.375 *A2*	7.50 *A2*	7.95 *A2*	
	Harrisburg, Pa.							5.30 *P2*	6.375 *P2*			
	Milton, Pa.	5.825 *M7*	5.825 *M7*									
	Hartford, Conn.			8.15 *R3*		9.325 *R3*						
	Johnstown, Pa.	5.675 *B3*	5.675 *B3*		6.725 *B3*		8.30 *B3*	5.30 *B3*		7.50 *B3*	7.95 *B3*	8.00 *B3*
	Steelton, Pa.		5.675 *B3*									
	Fairless, Pa.	5.825 *U1*	5.825 *U1*									
	Newark, Camden, N. J.			8.10 *W10, P10*		9.20 *W10, P10*						
	Bridgeport, Putnam, Willimantic, Conn.			8.20 *W10* 8.15 *J3*	6.80 *N8*	9.175 *N8*						
	Sparrows Pt., Md.		5.675 *B3*					5.30 *B3*		7.50 *B3*	7.95 *B3*	8.10 *B3*
	Palmer, Worcester, Readville, Mansfield, Mass.			8.20 *B5, C14*		9.325 *A5,B5*						8.30 *A5, W6*
	Spring City, Pa.			8.10 *K4*		9.20 *K4*						
MIDDLE WEST	Alton, Ill.	5.875 *L1*										8.20 *L1*
	Ashland, Newport, Ky.							5.30 *A7, A9*		7.50 *A9*	7.95 *A7*	
	Canton, Massillon, Mansfield, Ohio	6.15* *R3*		7.65 *R3,R2*	6.725 *R3, T5*	9.025 *R3,R2, T5*		5.30 *E2*				
	Chicago, Joliet, Waukegan, Madison, Harvey, Ill.	5.675 *U1,R3, W8,N4,P13*	5.675 *U1,R3, N4,P13,W8* 5.875 *L1*	7.65 *A5, W10,W8, B5,L2,N9*	6.725 *U1,R3, W8*	9.025 *A5, W10,W8, L2,N8,B5*	8.30 *U1,W8, R3*	5.30 *U1,A1, W8,I3*	6.375 *U1*	7.50 *U1, W8*	7.95 *U1, W8*	8.00 *A5,R3, W8,N4, K2,W7*
	Cleveland, Elyria, Ohio	5.675 *R3*	5.675 *R3*	7.65 *A5,C13, C18*		9.025 *A5, C13,C18*	8.30 *R3*	5.30 *R3,J3*	6.375 *J3*		7.95 *R3,J3*	8.00 *A5, C13,C18*
	Detroit, Plymouth, Mich.	5.675 *G3*	5.675 *G3*	7.90 *P3* 7.85 *P8B5H2* 7.65 *R5*	6.725 *R5,G3*	9.025 *R5,P8* 9.225 *B5,P3*	8.30 *G3*	5.30 *G3*		7.50 *G3*	7.95 *G3*	
	Duluth, Minn.											8.00 *A5*
	Gary, Ind. Harbor, Crawfordsville, Hammond, Ind.	5.675 *U1,I3, Y1*	5.675 *U1,I3, Y1*	7.65 *R3,J3*	6.725 *U1,I3, Y1*	9.025 *R3,M4*	8.30 *U1,Y1*	5.30 *U1,I3, Y1*	6.375 *J3, I1*	7.50 *U1, Y1*	7.95 *U1, Y1,I3*	8.10 *M4*
	Granite City, Ill.							5.40 *G2*				
	Kokomo, Ind.		5.775 *C9*									8.10 *C9*
	Sterling, Ill.	5.775 *N4*	5.775 *N4*				7.925 *N4*	5.30 *N4*			7.625 *N4*	8.10 *K2*
	Niles, Warren, Ohio Sharon, Pa.			7.65 *C10*	6.725 *C10,*	9.025 *C10*		5.30 *R3,S1*		7.50 *S1*	7.95 *R3, S1*	
	Owensboro, Ky.	5.675 *G5*			6.725 *G5*							
	Pittsburgh, Midland, Donora, Aliquippa, Pa.	5.675 *U1,J3*	5.675 *U1,J3*	7.65 *A5,B4, R3,J3,C11, W10,S9,C8, M9*	6.725 *U1,J3, C11,B7*	9.025 *A5, W10,R3,S9, C11,C8,M9*	8.30 *U1,J3*	5.30 *U1,J3*	6.375 *U1,J3*	7.50 *U1, J3,B7*	7.95 *U1, J3,B7*	8.00 *A5, J3,P6*
	Portsmouth, Ohio											8.00 *P7*
	Youngstown, Steubenville, O.	5.675 *U1,R3, Y1*	5.675 *U1,R3, Y1*	7.65 *A1,Y1, F2*	6.725 *U1,Y1*	9.025 *Y1,F2*	8.30 *U1,Y1*	5.30 *U1,W5, R3,Y1*		7.50 *Y1*	7.95 *U1,Y1*	8.00 *Y1*
WEST	Emeryville, Fontana, Cal.	6.425 *J5* 6.375 *K1*	6.425 *J5* 6.375 *K1*		7.775 *K1*		9.00 *K1*	6.10 *K1*		8.30 *K1*	8.75 *K1*	
	Geneva, Utah							5.30 *C7*			7.95 *C7*	
	Kansas City, Mo.	5.925 *S2*	5.675 *S2*		6.975 *S2*		8.55 *S2*					8.25 *S2*
	Los Angeles, Torrance, Cal.	6.375 *C7,B2*	6.375 *C7,B2*	9.10 *R3,P14, S12*	7.775 *B2*	11.00 *P14, B5*	9.00 *B2*					8.95 *B2*
	Minnequa, Colo.	6.125 *C6*	6.125 *C6*					6.15 *C6*				8.25 *C6*
	Portland, Ore.	6.425 *O2*	6.425 *O2*									
	San Francisco, Niles, Pittsburg, Cal.	6.375 *C7* 6.425 *B2*	6.375 *C7* 6.425 *B2*				9.05 *B2*					8.95 *C7,C6*
	Seattle, Wash.	6.425 *B2,N6, A10*	6.425 *B2,A10*		7.825 *B2*		9.05 *B2*	6.20 *B2*		8.40 *B2*	8.85 *B2*	
SOUTH	Atlanta, Ga.	5.875 *A8*	5.25 *A8*									8.00 *A8*
	Fairfield City, Ala. Birmingham, Ala.	5.675 *T2,R3, C16*	5.675 *T2,R3, C16*	8.25 *C16*			8.30 *T2*	5.30 *T2,R3*			7.95 *T2*	8.00 *T2,R3*
	Houston, Ft. Worth, Lone Star, Texas, Sand Springs, Okla.	5.925 *S2*	5.675 *S2*		6.975 *S2*		8.55 *S2*	5.40 *S2*		7.60 *S2*	8.05 *S2*	8.25 *S2*

† Merchant Quality—Special Quality 35¢ higher. (Effective Jan. 9, 1961) * Special Quality.

STEEL PRICES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angel Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, Ohio
A8 Atlantic Steel Co., Atlanta, Ga.
A9 Acme-Newport Steel Co., Newport, Ky.
A10 Alaska Steel Mills, Inc., Seattle, Wash.

B1 Babcock & Wilcox Tube Div., Beaver Falls, Pa.
B2 Bethlehem Steel Co., Pacific Coast Div.
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin, Inc., Harvey, Ill.
B6 Brooke Plant, Wickwire-Spencer Steel Div., Birdsboro, Pa.
B7 A. M. Byers, Pittsburgh
B8 Braeburn Alloy Steel Corp., Braeburn, Pa.
B9 Barry Universal Corp., Detroit, Mich.

C1 Calstrip Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Pittsburgh, Pa.
C11 Crucible Steel Co. of America, Pittsburgh
C13 Cuyahoga Steel & Wire Co., Cleveland
C14 Compressed Steel Shafting Co., Readville, Mass.
C15 G. O. Carlson, Inc., Thorndale, Pa.
C16 Connors Steel Div., Birmingham
C18 Cold Drawn Steel Plant, Western Automatic Machine Screw Co., Elyria, O.

D1 Detroit Steel Corp., Detroit
D2 Driver, Wilbur B., Co., Newark, N. J.
D3 Driver Harris Co., Harrison, N. J.
D4 Dickson Weatherproof Nail Co., Evanston, Ill.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire-Reeves Steel Corp., Mansfield, O.
E3 Enamel Products & Plating Co., McKeesport, Pa.

F1 Firth Sterling, Inc., McKeesport, Pa.
F2 Fitzsimons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G2 Granite City Steel Co., Granite City, Ill.
G3 Great Lakes Steel Corp., Detroit
G4 Greer Steel Co., Dover, O.
G5 Green River Steel Corp., Owenboro, Ky.

H1 Hanna Furnace Corp., Detroit
H2 Hercules Drawn Steel Corp., Toledo, O.

I2 Ingersoll Steel Div., New Castle, Ind.
I3 Inland Steel Co., Chicago, Ill.
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago
J5 Judson Steel Corp., Emeryville, Calif.

K1 Kaiser Steel Corp., Fontana, Calif.
K2 Keystone Steel & Wire Co., Peoria
K4 Keystone Drawn Steel Co., Spring City, Pa.

L1 Laclede Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid States Steel & Wire Co., Crawfordsville, Ind.
M7 Milton Steel Products Div., Milton, Pa.
M8 Mill Strip Products Co., Evanston, Ill.
M9 Moltrup Steel Products Co., Beaver Falls, Pa.
M10 Mill Strip Products Co., of Pa., New Castle, Pa.

N1 National Supply Co., Pittsburgh
N2 National Tube Div., Pittsburgh
N4 Northwestern Steel & Wire Co., Sterling, Ill.
N6 Northwest Steel Rolling Mills, Seattle
N7 Newman Crosby Steel Co., Pawtucket, R. I.
N8 Carpenter Steel of New England, Inc., Bridgeport, Conn.
N9 Nelson Steel & Wire Co.

O1 Oliver Iron & Steel Co., Pittsburgh
O2 Oregon Steel Mills, Portland

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Steel Corp., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit
P9 Pacific States Steel Co., Niles, Cal.
P10 Precision Drawn Steel Co., Camden, N. J.
P11 Production Steel Strip Corp., Detroit
P13 Phoenix Mfg. Co., Joliet, Ill.
P14 Pacific Tube Co.
P15 Philadelphia Steel and Wire Corp.

R1 Reeves Steel & Mfg. Div., Dover, O.
R2 Reliance Div., Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co., John A., Trenton, N. J.
R5 Jones & Laughlin Steel Corp., Stainless and Strip Div.
R6 Rodney Metals, Inc., New Bedford, Mass.
R7 Rome Strip Steel Co., Rome, N. Y.

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Div., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw and Steel Co., Fitchburg, Mass.
S5 Sweet's Steel Co., Williamsport, Pa.
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Div. of Copperweld Steel Co.,
S10 Seneca Steel Service, Buffalo
S11 Southern Electric Steel Co., Birmingham
S12 Sierra Drawn Div., Bliss & Laughlin, Inc., Los Angeles, Calif.
S13 Seymour Mfg. Co., Seymour, Conn.
S14 Screw and Bolt Corp. of America, Pittsburgh, Pa.

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal & Iron Div., Fairfield
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Strip Div., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T7 Texas Steel Co., Fort Worth
T8 Thompson Wire Co., Boston

U1 United States Steel Corp., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.
U3 Ulbrich Stainless Steels, Wallingford, Conn.
U4 U. S. Pipe & Foundry Co., Birmingham

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Div., Buffalo
W7 Wilson Steel & Wire Co., Chicago.
W8 Wisconsin Steel Div., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh
W12 Wallace Barnes Steel Div., Bristol, Conn.

Y1 Youngstown Sheet & Tube Co., Youngstown, O.

STEEL SERVICE CENTER PRICES

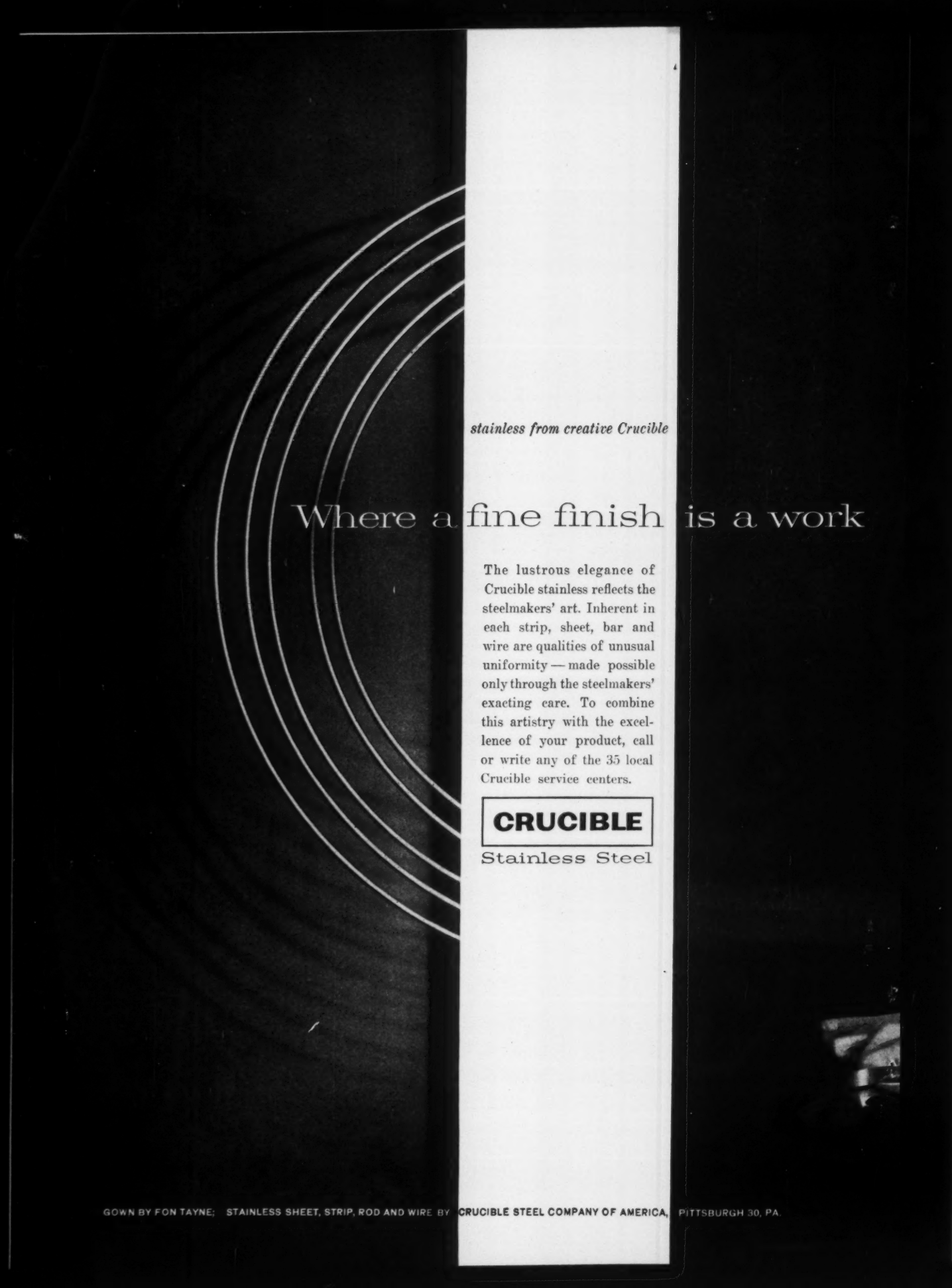
Metropolitan Price, dollars per 100 lb.

Cities	City Delivery‡ Charge	Sheets			Strip	Plates	Shapes	Bars		Alloy Bars			
		Hot-Rolled (18 ga. & hvr.)	Cold-Rolled (15 gage)	Galvanized (10 gage)††	Hot-Rolled		Standard Structural	Hot-Rolled (merchant)	Cold-Finished	Hot-Rolled 4615 As rolled	Hot-Rolled 4140 Annealed	Cold-Drawn 4615 As rolled	Cold-Drawn 4140 Annealed
Atlanta		9.37	10.61	11.83	10.85	9.73	9.94	9.53	13.24	.....	.....	.....	.....
Baltimore**	$.10	7.87	9.71	10.16	10.28	8.44	9.13	8.65	11.80	17.48	16.48	21.58	20.83
Birmingham**		8.46	10.20	10.69	9.45	8.41	8.47	8.26	13.14	16.76	16.76	.....	.....
Boston**	.10	9.84	10.68	11.87	12.26	9.72	10.26	9.87	13.45	17.79	16.79	23.89	21.14
Buffalo**	.15	8.80	9.95	11.40	11.15	8.80	9.30	8.90	11.60	17.45	16.45	21.55	20.80
Chicago**	.15	9.37	10.35	10.85	11.54	9.21	9.72	9.37	10.80	17.10	16.10	21.20	20.45
Cincinnati**	.15	8.89	10.41	10.35	11.21	8.94	9.62	9.02	11.68	17.42	16.42	21.52	20.77
Cleveland**	.15	8.72[1]	10.13	11.39	11.01	8.80	9.45	8.81	11.40	17.21	16.21	21.31	20.56
Denver**		10.90	12.53	13.27	13.07	10.74	11.24	10.88	12.97	.....	.....	.....	20.84
Detroit**	.15	9.63	10.61	11.20	11.91	9.58	10.29	9.68	11.16	17.38	16.38	21.48	20.73
Houston**		9.22	9.65	12.19[3]	10.78	8.95	8.86	8.63	13.10	17.50	16.55	21.55	20.85
Kansas City**	.15	9.59	11.42	10.95	11.76	9.43	9.93	9.57	11.77	17.17	15.87	21.87	21.12
Los Angeles**		9.50[1]	11.20	12.20	11.29	9.70	10.45	9.55	14.20	18.30	17.35	22.90	22.20
Memphis**	.15	9.13	10.50	.....	10.79	8.81	9.16	8.97	12.89	.....	.....	.....	.....
Milwaukee**	.15	9.51	10.49	10.99	11.68	9.35	9.94	9.51	11.04	17.24	16.24	21.24	20.59
New York	.10	9.46	10.23	11.45	11.56	9.61	10.30	9.84	13.35	17.50	16.50	21.60	20.85
Norfolk	.20	8.20	.....	.....	8.90	8.65	9.20	8.90	10.70	.....	.....	.....	.....
Philadelphia**	.10	8.45	9.70	10.76	10.45	8.80	9.05	8.85	12.05	17.48	16.48	21.58	20.83
Pittsburgh**	.15	8.72	10.13	11.28	10.99	8.56	9.06	8.70	11.40	17.10	16.10	21.20	20.45
Portland**		9.45	11.30	12.35	11.45	9.60	10.05	9.45	16.65	18.60	17.80	22.70	22.20
San Francisco**	.10	10.27	11.79[2]	11.50	11.88	10.48	10.50	10.17	15.20	18.30	17.35	22.90	22.20
Seattle**		10.51	11.57	12.50	11.95	10.10	10.65	9.94	16.20	18.60	17.80	22.70	22.20
Spokane**	.15	10.51	11.57	12.50	11.95	10.10	10.65	9.94	16.35	17.75	17.95	21.58	22.35
St. Louis**	.15	9.57	10.75	11.23	11.74	9.43	9.95	9.59	11.43	17.48	16.48	21.58	20.83
St. Paul**	.15	8.99	9.84	10.99	11.16	8.83	9.33	8.97	11.64	.....	16.69	.....	21.04

Base Quantities (Standard unless otherwise keyed): Cold finished bars: 2000 lb or over. Alloy bars: 1000 to 1999 lb. All others: 2000 to 4999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may be combined with each other for quantity. ** These cities are on net pricing. Prices shown are for 2000 lb item quantities of the following: Hot-rolled sheet—10 ga. x 36 x 96—120; Cold-rolled sheet—20 ga x 36 x 96—120; Galv. sheet—10 ga x 36—120; Hot-rolled strip—⅛" x 1"; Plate—¼" x 84"; Shapes—I-Beams 6 x 12.5; Hot-rolled bar—Rounds—⅝-2 15/16; Cold-finished bar—C 1018—1" rounds; Alloy bar—hot-rolled 4615—1⅝" to 2⅞"; cold drawn—15/16" to 2⅞" round; Hot-rolled 4140—⅝" to 2⅞" round, cold drawn—15/16" to 2⅞" round.

†† 13¢ zinc. ‡ Deduct for country delivery. [1] 15 ga. & heavier; [2] 14 ga. & lighter. [3] 10 ga. x 48 — 120.

(Effective Jan. 9, 1961)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Where a fine finish is a work
The lustrous elegance of Crucible stainless reflects the steelmakers' art. Inherent in each strip, sheet, bar and wire are qualities of unusual uniformity — made possible only through the steelmakers' exacting care. To combine this artistry with the excellence of your product, call or write any of the 35 local Crucible service centers.
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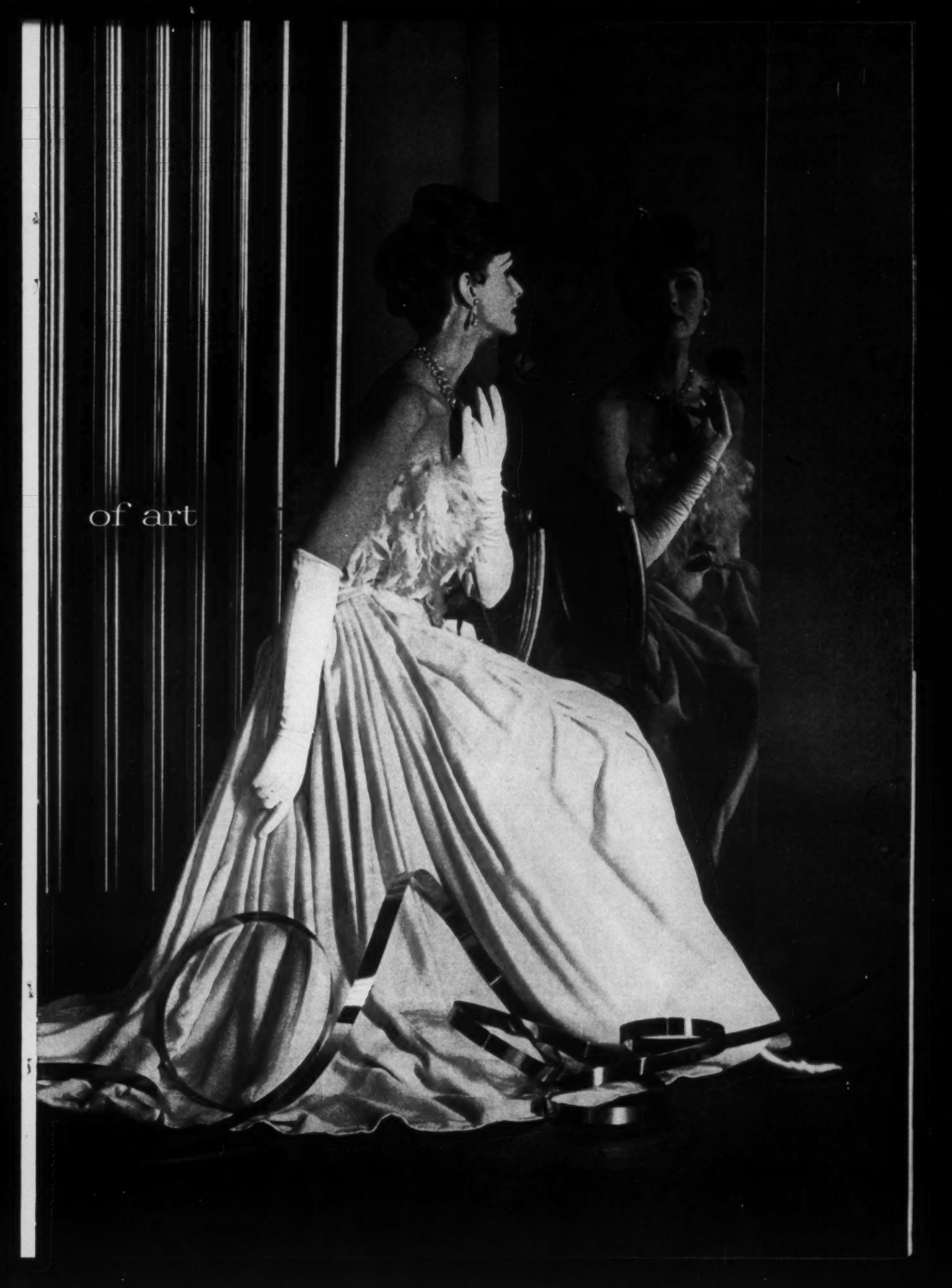
Stainless Steel
GOWN BY FON TAYNE; STAINLESS SHEET, STRIP, ROD AND WIRE BY CRUCIBLE STEEL COMPANY OF AMERICA, PITTSBURGH 30, PA.


of art

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Fdry.	Mall.	Bess.	Low Phos.
Birdsboro, Pa. *B6*	68.00	68.50	69.00	69.50	73.00
Birmingham *R3*	62.00	62.50*	66.50	.....	.....
Birmingham *W9*	62.00	62.50*	66.50	.....	.....
Birmingham *U4*	62.00	62.50*	66.50	.....	.....
Buffalo *R3*	66.00	66.50	67.00	67.50	.....
Buffalo *H1*	66.00	66.50	67.00	67.50	71.50†
Buffalo *W6*	66.00	66.50	67.00	67.50	.....
Chester *P2*	68.00	68.50	69.00	.....	.....
Chicago *I4*	66.00	66.50	66.50	67.00	.....
Cleveland *A5*	66.00	66.50	66.50	67.00	71.00†
Cleveland *R3*	66.00	66.50	66.50	67.00	.....
Duluth *I4*	66.00	66.50	66.50	67.00	71.00†
Erie *I4*	66.00	66.50	66.50	67.00	71.00†
Fontana *K1*	75.00	75.50	.....	.....	.....
Geneva, Utah *C7*	66.00	66.50	.....	.....	.....
Granite City *G2*	67.90	68.40	68.90	.....	.....
Hubbard *Y1*	.....	.....	66.50	.....	.....
Ironton, Utah *C7*	66.00	66.50	.....	.....	.....
Lyles, Tenn. *T3*	.....	.....	.....	.....	73.00
Midland *C11*	66.00	.....	.....	.....	.....
Minnequa *C6*	68.00	68.50	69.00	.....	.....
Monessen *P6*	66.00	.....	.....	.....	.....
Neville Is. *P4*	66.00	66.50	66.50	67.00	71.00†
N. Tonawanda *T1*	.....	66.50	67.00	67.50	.....
Rockwood *T3*	62.00	62.50	66.50	67.00	73.00
Sharpsville *S3*	66.00	.....	66.50	67.00	.....
So. Chicago *R3*	66.00	66.50	66.50	67.00	.....
So. Chicago *W8*	66.00	.....	66.50	67.00	.....
Swedeland *A2*	68.00	68.50	69.00	69.50	73.00†
Toledo *I4*	66.00	66.50	66.50	67.00	.....
Troy, N. Y. *R3*	68.00	68.50	69.00	69.50	73.00
Youngstown *Y1*	.....	.....	66.50	.....	.....

DIFFERENTIALS: Add, 75¢ per ton for each 0.25 pct silicon or portion thereof over base (1.75 to 2.25 pct except low phos., 1.75 to 2.00 pct) 50¢ per ton for each 0.25 pct manganese or portion thereof over 1 pct, $2 per ton for 0.50 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel.

Add $1.00 for 0.31-0.69 pct phos. Add 50¢ per gross ton for truck loading charge.

Silvery Iron: Buffalo (6 pct), *H1*, $79.25; Jackson *J1, I4*, (Globe Div.), $78.00; Niagara Falls (15.01-15.50), $101.00; Keokuk (14.01-14.50), $89.00; (15.51-16.00), $92.00. Add 75¢ per ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 13 pct. Add $1.00 for each 0.50 pct manganese over 1.00 pct.

† Intermediate low phos.

FASTENERS

(Base discounts, f.o.b. mill, based on latest list prices)

Hex Screws and All Bolts Including Hex & Hex, Square Machine, Carriage, Lag, Plow, Step, and Elevator

(Discount for 1 container)

	Pct
Plain finish—packaged and bulk.	50
Hot galvanized and zinc plated—packaged	43.75
Hot galvanized and zinc plated—bulk	50

Nuts: Hexagon and Square, Hex, Heavy Hex, Thick Hex & Square

(Discount for 1 container)

	Pct
Plain finish—packaged and bulk.	50
Hot galvanized and zinc plated—packaged	43.75
Hot galvanized and zinc plated—bulk	50

Hexagon Head Cap Screws—UNC or UNF Thread—Bright & High Carbon

(Discount for 1 container)

Plain finish—packaged and bulk.	50
Hot galvanized and zinc plated—packaged	43.75
Hot galvanized and zinc plated—bulk	50

(On all the above categories add 25 pct for less than container quantities. Minimum plating charge—$10.00 per item. Add 7½ pct for nuts assembled to bolts)

Machine Screws and Stove Bolts

(Packages—plain finish)

	Discount Screws	Bolts
Full Cartons	46	46
Machine Screws—bulk		
¼ in. diam or smaller	25,000 pcs	50
5/16, ⅜ & ½ in. diam	15,000 pcs	50

Machine Screw and Stove Bolt Nuts

(Packages—plain finish)

	Discount Hex	Square
Full Cartons	46	57
Bulk		
¼ in. diam or smaller	25,000 pcs	
5/16 or ⅜ in. diam	56	60
	15,000 pcs	
	56	60

Rivets

	Base per 100 *lb*
½ in. diam and larger	$12.85
	Pct Off List
7/16 in. and smaller	15

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	per lb	SAE
18	4	1	—	—	$1.84	T-1
18	4	1	—	5	2.545	T-4
18	4	2	—	—	2.005	T-2
1.5	4	1.5	8	—	1.20	M-1
6	4	3	6	—	1.59	M-3
6	4	2	5	—	1.345	M-2
High-carbon chromium					.955	D-3, D-5
Oil hardened manganese					.505	O-2
Special carbon					.38	W-1
Extra carbon					.38	W-1
Regular carbon					.325	W-1

Warehouse prices on and east of Mississippi are 4¢ per lb higher. West of Mississippi, 6¢ higher.

LAKE SUPERIOR ORES

51.50% Fe natural, delivered lower Lake ports. Interim prices for 1960 season. Freight changes for seller's account.

	Gross Ton
Openhearth lump	$12.70
Old range, bessemer	11.85
Old range, nonbessemer	11.70
Mesabi, bessemer	11.60
Mesabi, nonbessemer	11.45
High phosphorus	11.45

(Effective Jan. 9, 1961)

STAINLESS STEEL

Base price cents per lb. f.o.b. mill

Product	201	202	301	302	303	304	316	321	347	403	410	416	430
Ingots, reroll.	22.75	24.75	24.00	26.25	—	28.00	41.25	33.50	38.50	—	17.50	—	17.75
Slabs, billets	25.00	28.25	26.00	29.50-32.75	32.00	29.50-34.50	47.50	38.00	46.50	—	19.25-21.50	—	19.75 21.75
Billets, forging	—	37.75	38.75	39.50	42.50	39.50	64.50	48.75	57.75	29.25	29.25	29.75	29.75
Bars, struct.	43.50	44.50	46.00	46.75	49.75	46.75	75.75	57.50	67.25	35.00	35.00	35.50	35.50
Plates	39.25	40.00	41.25	42.25	45.00	45.75	71.75	54.75	64.75	30.00	30.00	31.25 31.75	31.00
Sheets	48.50	49.25	51.25	52.00	56.75	52.00	80.75	65.50	79.25	40.25	40.25	48.25	40.75
Strip, hot-rolled	36.00	39.00	37.25	40.50	—	40.50	68.50	53.50	63.50	—	31.00	—	32.00
Strip, cold-rolled	45.00	49.25	47.50	52.00	56.75	52.00	80.75	65.50	79.25	40.25	40.25	42.50	40.75
Wire CF; Rod HR	—	42.25	43.50	44.25	47.25	44.25	71.75	54.50	63.75	33.25	33.25	33.75	33.75

STAINLESS STEEL PRODUCING POINTS:

Sheets: Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* Vandergrift, Pa., *U1;* Washington, Pa., *W2, J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Detroit, *M2;* Louisville, O., *R5.*

Strip: Midland, Pa., *C11;* Waukegan, Cleveland, *A5;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* W. Leechburg, Pa., *A3;* Bridgeville Pa., *U2;* Detroit, *M2;* Detroit, *S1;* Canton, Massillon, O., *R3;* Harrison, N. J., *D3;* Youngstown, *R5;* Sharon, Pa., *S1;* Butler, Pa., *A7,* Wallingford, Conn., *U3* (plus further conversion extras); *W1* (25¢ per lb. higher); Seymour, Conn., *S13,* (25¢ per lb. higher); New Bedford, Mass., *R6* Gary, *U1,* (25¢ per lb. higher); Baltimore, Md., *E1* (300 series only).

Bar: Baltimore, *A7;* S. Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R5;* S. Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Canton, O., *T5, R3;* Ft. Wayne, *I4;* Detroit, *R5;* Gary, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Ambridge, Pa., *B7.*

Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Newark, N. J. *D2;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2;* Detroit, *R5;* Reading, Pa., *C2;* Bridgeport, Conn., *N8* (down to and including ¼").

Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11;* S. Chicago, *U1.*

Plates: Ambridge, Pa., *B7;* Baltimore, *E1;* Brackenridge, Pa., *A3;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3;* Coatesville, Pa., *C15;* Vandergrift, Pa., *U1;* Gary, *U1.*

Forging billets: Ambridge, Pa., *B7;* Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11;* Detroit, *R5;* Munhall, Pa., S. Chicago, *U1;* Owensboro, Ky., *G5;* Bridgeport, Conn., *N8;* Reading, Pa., *C2.*

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails	Woven Wire Fence	"T" Fence Posts	Single Loop Bale Ties	Galv. Barbed and Twisted Barbless Wire	Merch. Wire Ann'ld ¢/lb.	Merch. Wire Galv. ¢/lb.
	Col	Col	Col	Col	Col		
Alabama City *R3*	173	187	...	212	193	9.00	9.55
Aliquippa *J3***	173	190	...	...	190	9.00	9.675
Atlanta *A8***	173	191	...	212	197	9.00	9.75
Bartonville *K2***	175	193	183	214	199	9.10	9.85
Buffalo *W6*	...	...	...	...	...	9.00	9.55*
Chicago *N4*	173	191	177	212	197	9.00	9.75
Chicago *R3*	...	...	...	...	...	9.00	9.55
Chicago *W7*	173	...	...	...	...	9.00	9.55†
Cleveland *A6*	...	...	...	...	...	...	...
Cleveland *A5*	...	...	...	...	...	9.00	...
Crawf'dav. *M4***	175	193	...	214	199	9.10	9.85
Donora, Pa. *A5*	173	187	...	212	193	9.00	9.55
Duluth *A5*	173	187	177	212	193	9.00	9.55
Fairfield, Ala. *T2*	173	187	...	212	193	9.00	9.55
Galveston *D4*	9.10‡	...	...	...	...	...	...
Houston *S2*	178	192	...	217	198	9.25	9.80†
Jacksonville *M4*	184-1	197	...	219	203	9.10	9.775
Johnstown *B3***	173	190	177	...	196	9.00	9.675
Joliet, Ill. *A5*	173	187	...	212	193	9.00	9.55
Kokomo C9*	175	189	...	214	195*	9.10	9.65*
L. Angeles *B2****	...	...	...	...	...	9.95	10.625
Kansas City *S2**	178	192	...	217	198*	9.25	9.80†
Minnequa *C6*	178	192	182	217	198†	9.25	9.80†
Palmer, Mass *W6*	...	...	...	...	...	9.30	9.85*
Pittsburg, Cal. *C7*	192	210	...	...	213	9.95	10.50
Rankin Pa. *A5*	173	187	...	...	193	9.00	9.55
So. Chicago *R3*	173	187	...	...	193	8.65	9.20
S. San Fran. *C6*	...	...	...	236	...	9.95	10.50
Sparrows Pt. *B3***	175	...	...	215	198	9.10	9.775
Struthers, O. *Y1**	...	...	...	...	...	8.65	9.20
Worcester *A5*	179	...	...	...	...	9.30	9.85
Williamsport *S5*	...	...	...	...	...	...	...

* Zinc less than .10¢. *** .10¢ zinc.
** 13-13.5¢ zinc. † Plus zinc extras.
‡ Wholesalers only.

PIPE AND TUBING

Base discounts (pct) f.o.b. mills. Base price about $200 per net ton.

STANDARD T. & C.	BUTTWELD														SEAMLESS							
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½ In.		3 In.		3½-4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
Sparrows Pt. *B3*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Youngstown *R3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fontana *K1*	*10.75	*26.00	*7.75	*22.00	*4.25	*17.50	*1.75	*16.75	*1.25	*15.75	*0.75	*15.25	0.75	*15.50								
Pittsburgh *J3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Alton, Ill. *L1*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Sharon *M3*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Fairless *N2*	0.25	*15.0	3.25	*11.0	6.75	*6.50	9.25	*5.75	9.75	*4.75	10.25	*4.25	11.75	*4.50								
Pittsburgh *N1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Wheeling *W5*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Wheatland *W4*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50								
Youngstown *Y1*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
Indiana Harbor *Y1*	1.25	*14.0	4.25	*10.0	7.75	*5.50	10.25	*4.75	10.75	*3.75	11.25	*3.25	12.75	*3.50								
Lorain *N2*	2.25	*13.0	5.25	*9.0	8.75	*4.50	11.25	*3.75	11.75	*2.75	12.25	*2.25	13.75	*2.50	*12.25	*27.25	*5.75	*22.50	*3.25	*20.0	*1.75	*18.50
EXTRA STRONG PLAIN ENDS																						
Sparrows Pt. *B3*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Youngstown *R3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Fairless *N2*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Fontana *K1*	*6.25		*2.25		0.75		1.25		1.75		2.25		2.75									
Pittsburgh *J3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Alton, Ill. *L1*	4.75	*9.0	8.75	*5.0	11.75	*0.50	12.25	*1.75	12.75	*0.75	13.25	*0.25	13.75	*1.50								
Sharon *M3*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Pittsburgh *N1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Wheeling *W5*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Wheatland *W4*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50								
Youngstown *Y1*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50
Indiana Harbor *Y1*	5.75	*8.0	9.75	*4.0	12.75	0.50	13.25	*0.75	13.75	0.25	14.25	0.75	14.75	*0.50								
Lorain *N2*	6.75	*7.0	10.75	*3.0	13.75	1.50	14.25	0.25	14.75	1.25	15.25	1.75	15.75	0.50	*10.75	*24.75	*3.25	*19.0	*0.75	*16.50	4.25	*11.50

Threads only, buttweld and seamless, 2¼ pt. higher discount. Plain ends, buttweld and seamless, 3-in. and under, 5½ pt. higher discount.
Galvanized discounts based on zinc price range of over 9¢ to 11¢ per lb. East St. Louis. For each 2¢ change in zinc, discounts vary as follows: ½, ¾ and 1-in., 2 pt.; 1¼, 1½ and 2-in., 1½ pt.; 2½ and 3-in., 1 pt., e.g., zinc price range of over 13¢ to 15¢ would lower discounts on 2½ and 3-in. pipe by 2 points; zinc price in range over 7¢ to 9¢ would increase discounts.

CAST IRON WATER PIPE INDEX

Birmingham	125.8
New York	138.6
Chicago	140.0
San Francisco-L. A.	148.6

Dec. 1955, value, Class B or heavier 5 in. or larger, bell and spigot pipe. Explanation: p. 57, Sept. 1, 1955, issue. Source: U. S. Pipe and Foundry Co.

COKE

Furnace, beehive (f.o.b.)	Net-Ton
Connellsville, Pa.	$14.75 to $15.50
Foundry, beehive (f.o.b.)	$18.50
Foundry oven coke	
Buffalo, del'd	$33.25
Chattanooga, Tenn.	30.80
Ironton, O., f.o.b.	30.50
Detroit, f.o.b.	32.00
New England, del'd	33.55
New Haven, f.o.b.	31.00
Kearny, N. J., f.o.b.	31.25
Philadelphia, f.o.b.	31.00
Swedeland, Pa., f.o.b.	31.00
Painesville, Ohio, f.o.b.	32.00
Erie, Pa., f.o.b.	32.00
St. Paul, f.o.b.	31.25
St Louis, f.o.b.	33.00
Birmingham, f.o.b.	30.35
Milwaukee, f.o.b.	32.00
Neville Is., Pa.	30.75

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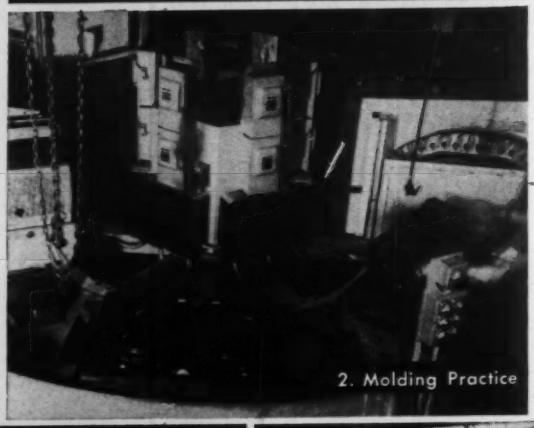
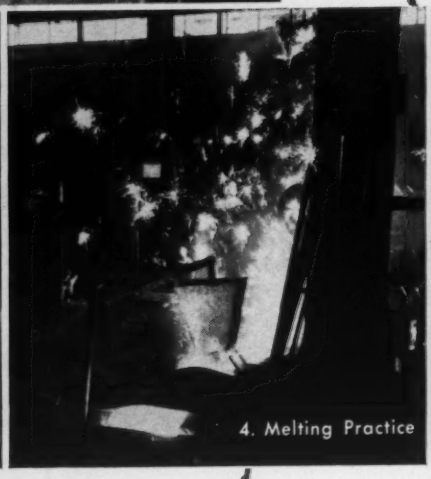
1. Pattern Making

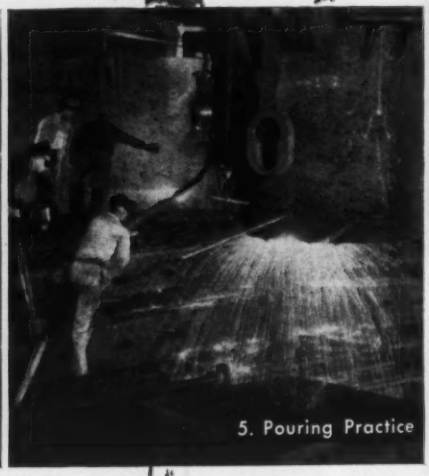


2. Molding Practice

3. Material Selection



4. Melting Practice



5. Pouring Practice

REPUBLIC FOUNDRY SERVICE ENGINEERS GIVE YOU MORE THAN METALLURGICAL HELP

6. Finishing

From pattern making to finishing operations, Republic Foundry Service Engineers offer you more than metallurgical assistance.

These men, backed by their complete knowledge of metal behavior and practical foundry experience, are thoroughly qualified to assist you in every department of your foundry operation.

No pressure is applied to promote one grade of pig iron over another, because Republic produces the most complete line of pig iron in the industry. The Foundry Service Engineer recommends the grade best suited to your requirements, your equipment, your specifications. Northern grades include Chateaugay, Foundry, Malleable, Bessemer, and Basic. Southern furnaces produce Malleable, Foundry, and Basic.

To find out more about the latest processes and techniques for improving castings . . . for suggestions on increasing production efficiency . . . for ideas on increasing the use and sale of castings, mail coupon for a call by a Republic Foundry Service Engineer. Republic's Complete Foundry Engineering Service is available to all foundries without obligation.

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REPUBLIC STEEL CORPORATION
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1441 REPUBLIC BUILDING • CLEVELAND 1, OHIO

☐ Have a Foundry Service Engineer call.
☐ Send more information on Republic Pig Irons.

Name_____ Title_____

Company_____

Address_____

City_____ Zone____ State_____

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Tie Plates	Track Bolts Untreated
Bessemer *U1*	5.75	6.725	7.25	.....	.....	.....
Cleveland *R3*	.....	.....	.....	.....	.....	15.35
So. Chicago *R3*	.....	.....	.....	10.10	.....	.....
Ensley *T2*	5.75	6.725	.....	.....	.....	.....
Fairfield *T2*	.....	6.725	.....	10.10	6.875	.....
Gary *U1*	5.75	.....	.....	.....	6.875	.....
Huntington, *C16*	.....	6.725	.....	.....	.....	.....
Ind. Harbor *I3*	.....	.....	.....	10.10	.....	.....
Johnstown *B3*	.....	6.725	.....	.....	.....	.....
Joliet *U1*	.....	.....	7.25	.....	.....	.....
Kansas City *S2*	.....	.....	.....	10.10	.....	15.35
Lackawanna *B3*	5.75	6.725	7.25	.....	6.875	.....
Lebanon *B3*	.....	.....	7.25	.....	.....	15.35
Minnequa *C6*	5.75	7.225	7.25	10.10	6.875	15.35
Pittsburgh *S14*	.....	.....	.....	.....	.....	15.35
Pittsburgh *J3*	.....	.....	.....	10.10	.....	.....
Seattle *B2*	.....	.....	.....	.....	6.75	15.85
Steelton *B3*	5.75	.....	7.25	.....	6.875	.....
Struthers *Y1*	.....	.....	.....	10.10	.....	.....
Torrance *C7*	.....	.....	.....	.....	6.75	.....
Williamsport *S5*	.....	6.725	.....	.....	.....	.....
Youngstown *R3*	.....	.....	.....	10.10	.....	.....

C-R SPRING STEEL

Cents Per Lb F.o.b. Mill	CARBON CONTENT 0.26-0.40	0.41-0.60	0.61-0.80	0.81-1.05	1.06-1.35
Anderson, Ind. *G4*	8.95	10.40	12.60	15.60	18.55
Baltimore, Md. *T8*	9.50	10.70	12.90	15.90	18.85
Bristol, Conn. *W12*	.....	10.70	12.90	16.10	19.30
Boston *T8*	9.50	10.70	12.90	15.90	18.85
Buffalo, N. Y. *R7*	8.95	10.40	12.60	15.60	18.55
Carnegie, Pa. *S9*	8.95	10.40	12.60	15.60	18.55
Cleveland *A5*	8.95	10.40	12.60	15.60	18.55
Dearborn *S1*	9.05	10.50	12.70	.....	.....
Detroit *D1*	9.05	10.50	12.70	15.70	.....
Detroit *D2*	9.05	10.50	12.70	.....	.....
Dover, O. *G4*	8.95	10.40	12.60	15.60	18.55
Evanston, Ill. *M8*	9.05	10.40	12.60	15.60	.....
Franklin Park, Ill. *T8*	9.05	10.40	12.60	15.60	18.55
Harrison, N. J. *C11*	.....	.....	12.90	16.10	19.30
Indianapolis *R3*	9.10	10.55	12.60	15.60	18.55
Los Angeles *C1*	11.15	12.60	14.80	17.80	.....
New Britain, Conn. *S7*	9.40	10.70	12.90	15.90	18.85
New Castle, Pa. *B4*	8.95	10.40	12.60	15.60	.....
New Castle, Pa. *M10*	8.95	10.40	12.60	15.60	.....
New Haven, Conn. *U1*	9.40	10.70	12.90	15.90	.....
Pawtucket, R. I. *N7*	9.50	10.70	12.90	15.90	18.85
Riverdale, Ill. *A1*	9.05	10.40	12.60	15.60	18.55
Sharon, Pa. *S1*	8.95	10.40	12.60	15.60	18.55
Trenton, *R4*	.....	10.70	12.90	16.10	19.30
Warren, Ohio *T4*	8.95	10.40	12.60	15.60	18.75
Worcester, Mass. *A5*	9.50	10.70	12.90	15.90	18.85
Youngstown *R5*	9.10	10.55	12.60	15.60	18.55

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, frt allowed in quantity)

Copper

Rolled elliptical, 18 in. or longer, 5000 lb lots 43.50

Electrodeposited, 5000 lb lots ... 36.50

Brass, 80-20, ball anodes, 2000 lb or more 50.50

Zinc, ball anodes, 2000 lb lots 20.25

(for elliptical add 1¢ per lb)

Nickel, 99 pct plus, rolled carbon, 5000 lb 1.0225

(Rolled depolarized add 3¢ per lb)

Cadmium, 5000 lb 1.50

Tin, ball anodes $1.05 per lb (approx.).

Chemicals

(Cents per lb, f.o.b. shipping point)

Copper cyanide, 100 lb drum, N. Y.. 65.90

Copper sulphate, 25.2 Cu min, 6000 lbs per cwt, Detroit 17.45

Nickel sulfate, 5000 to 23,000 lbs... 29.00

Nickel chloride, freight allowed, 100 lb 45.00

Sodium cyanide, domestic, f.o.b. Chicago, 200 lb drums 25.00

Zinc cyanide, 100 lb, N. Y. 60.75

Potassium cyanide, 100 lb drum N. Y. 45.50

Chromic acid, flake type, 10,000 lb or more, N. Y. 30.94

METAL POWDERS

(Cents per lb, f.o.b. shipping point for ton lots or over, except as noted)

Iron Powders

Molding grade, domestic and foreign, 98 pct Fe, 100 mesh bags, freight allowed east of Miss. R. 11.50

Electrolytic Iron, melting stock, 99.87 pct Fe, truckload lots 25.75

Carbonyl Iron (200 lb lots) 88.00

Welding Grades 8.10

Cutting and Scarfing Grades 9.85

Hydrogen reduced, domestic 11.25

Copper Powders

Molding Grades

Electrolytic, domestic, f.o.b. shipping point. 15.00†

Atomized ..... 43.3 to 61.3

Reduced ..... 15.00†

Chemically Precipitated 44.5

Brass, 5000-lb lots ..... 33.1 to 49.8

Bronze, 5000-lb lots ..... 51.3 to 55.1

Chromium, electrolytic 5.00

Lead ..... 7.50†

Manganese, electrolytic ... $1.00

Molybdenum .....$3.60 to $4.35

Nickel $1.15

Carbonyl Nickel, 20,000 lb lots $1.01

Nickel-Silver, 5000 lb lots.. 58.8 to 66.7

Silicon 70.00

Solder ..... 7.00†

Stainless Steel, 316 ..... $1.07

Stainless steel 304 ..... 89.00

Tin ..... 14.00†

Titanium, 99.25 + pct, per lb, f.o.b. $11.25

Tungsten, carbide grades... $3.25

Zinc ..... 20.0 to 33.2

† Plus cost of metal.

ELECTRICAL SHEETS

22-Gage F.o.b. Mill Cents Per Lb	Hot-Rolled (Cut Lengths)*	Cold-Reduced (Coiled or Cut Length) Semi-Processed	Fully Processed
Field	.....	9.875	.....
Armature	11.70	11.20	11.70
Elect.	12.40	11.90	12.40
Special Motor		12.475	
Motor	13.55	13.05	13.55
Dynamo	14.65	14.15	14.65
Trans. 72	15.70	15.20	15.70
Trans. 65	16.30		
		Grain Oriented	
Trans. 58	16.80	Trans. 80	19.70
Trans. 52	17.85	Trans. 73	20.20
		Trans. 66	20.70

Producing points: Aliquippa *(J3)*; Beech Bottom *(W5)*; Brackenridge *(A3)*; Granite City *(G2)*· Indiana Harbor *(I3)*; Mansfield *(E2)*; Newport, Ky. *(A9)*; Niles, O. *(S1)*; Vandergrift *(U1)*; Warren, O. *(R3)*; Zanesville, Butler *(A7)*.

CLAD STEEL

Base prices, cents per lb f.o.b.

Cladding	Plate *(L4, P2, A3, J2)* 10 pct	15 pct	20 pct	Sheet *(I2)* 20 pct
Stainless Type 302	.....	.....	.....	37.50
304	28.80	31.55	34.30	40.00
316	42.20	46.25	50.25	58.75
321	34.50	37.75	41.05	47.25
347	40.80	44.65	48.55	57.00
405	24.60	26.90	29.25	.....
410	22.70	24.85	27.00	.....
430	23.45	25.65	27.90	.....

CR Strip (S9) Copper, 10 pct, 2 sides, 43.40; 1 side, 36.35.

(Effective Jan. 9, 1961)

REFRACTORIES

Fire Clay Brick

Carloads per 1000

Super duty, Mo., Pa., Md., Ky.... $185.00

High duty (except Salina, Pa., add $5.00) 140.00

Medium duty 125.00

Low duty (except Salina, Pa., add $2.00) 103.00

Ground fire clay, net ton, bulk... 22.50

Silica Brick

Mt. Union, Pa., Ensley, Ala. $158.00

Childs, Hays 163.00

Chicago District 168.00

Western Utah 183.00

California 185.00

Super Duty Hays, Pa., Athens, Tex., Windham, Warren, O. 163.00-168.00

Silica cement, net ton, bulk, Chicago 26.75

Silica cement, net ton, bulk, Ensley, Ala. 27.75

Silica cement, net ton, bulk, Mt. Union, Pa. 25.75

Silica cement, net ton, bulk, Utah and Calif. 39.00

Chrome Brick

Standard chemically bonded, Baltimore, Md. $620.00

Gary, Ind. 658.50

Standard, Pascagoula, Miss. 647.50

Standard chemically bonded, Curtiner, Calif. 119.00

Burned, Baltimore 585.00

Magnesite Brick

Standard, Baltimore $715.00

Chemically bonded, Baltimore 655.00

Chemically bonded, Pascagoula, Miss. 682.50

Grain Magnesite

St. ⅜ to ½-in. grains

Per net ton

Domestic, f.o.b. Baltimore in bulk. $73.00

Domestic, f.o.b., Pascagoula, Miss... 80.00

Domestic, f.o.b. Chewalah, Wash., Luning, Nev. in bulk 46.00

in sacks 52.00-54.00

Dead Burned Dolomite

F.o.b. bulk, producing points in: Pa., W. Va., Ohio $16.75

Missouri Valley 15.60

Midwest 17.00

ELECTRODES

Cents per lb. f.o.b. plant, threaded, with nipples, unboxed.

GRAPHITE Diam. (In.)	Length (In.)	Price	CARBON* Diam. (In.)	Length (In.)	Price
24	84	27.25	40	100, 110	12.50
20	72	26.50	35	110	11.20
18	72	27.50	30	110	11.70
14	72	27.25	24	72	11.95
12	72	28.25	20	90	11.55
10	60	29.50	17	72	12.10
10	48	30.00	14	72	12.55
7	60	29.75	10	60	13.80
6	60	33.25	8	60	14.25
4	40	37.00			
3	40	39.25			
2½	30	41.50			
2	24	64.00			

* Prices shown cover carbon nipples.

BOILER TUBES

$ per 100 ft. carload lots cut 10 to 24 ft. F.o.b. Mill	Size OD-In.	B.W. Ga.	Seamless H.R.	C.D.	Elec. Weld H.R.
Babcock & Wilcox..	2	13	40.28	47.21	35.74
Jones & Laughlin *	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
National Tube.....	2	13	40.28	47.21	35.74
	2½	12	54.23	63.57	48.13
	3	12	62.62	73.40	55.59
	3½	11	73.11	85.70	65.84
	4	10	97.08	113.80	88.10
Pittsburgh Steel...	2	13	40.28	47.21	.....
	2½	12	54.23	63.57	.....
	3	12	62.62	73.40	.....
	3½	11	73.11	85.70	.....
	4	10	97.08	113.80	.....

* Electricweld only.

Savings Pile Up With Torrington Needle Bearings

You get performance-plus at a low, low unit cost when you specify Torrington Needle Bearings. A full complement of small-diameter rollers provides a maximum number of contact lines. The result—a higher radial load capacity at a lower unit cost than any other bearing of comparable size or performance.

Precision rollers operate smoothly and efficiently, with a low coefficient of starting and running friction. Positive roller retention is insured by turned-in lips on the outer shell, permitting faster and easier installation or assembly.

Your Torrington representative is an expert on Needle Bearings. For full information on how they can bring savings and improved product design and performance call Torrington—maker of every basic type of anti-friction bearing.

TORRINGTON NEEDLE BEARINGS FEATURE:

- Full complement of retained rollers
- Unequalled radial load capacity
- Low coefficient of starting and running friction
- Low unit cost
- Long service life
- Compactness and lightweight
- Runs directly on hardened shafts
- Permits use of larger and stiffer shafts

progress through precision **TORRINGTON BEARINGS**

THE TORRINGTON COMPANY Torrington, Conn. • South Bend 21, Indiana

AUTOMATICS, 2⅝" Conomatic 8 spindle (3), 47
BENDER, Cyril J. Bath double wing hy. dy. tangent
BORER, No. 62 Ex-Cell-O hydraulic, cylinder, 6 spindle
BROACH, 10 ton 66" stroke, Model SRV LaPointe, new '51
DUPLICATOR, Pratt Whitney Keller, Model BL-2416, 3 spindle
DRILL, MULTIPLE, 36 spindle No. 4BL Nateo, late
DRILL, RADIAL, 6'—19" col. Cincinnati Bickford super service
DRILL, DRIVER, No. 20 H.O. Baker vertical hydraulic, MD
GEAR MACHINERY, 5B Farrel/Sykes/Birmingham (3), late
GRINDER, CENTERLESS, No. 12 Landis, Microsphere bearings, 48
GRINDER, CYLINDRICAL, 16" x 36" Norton type C plain MD
GRINDER, SURFACE, 12" x 12" x 48" Thompson type C, hydraulic, horizontal
GRINDER, THREAD, No. 35L Ex-Cell-O universal precision, hydraulic
GRINDER, THREAD, Model TG615 J & L automatic
HONE, No. 728 Micromatic, vertical, hydra-hone, hydraulic
KEYSEATER, 3"—3½" x 24" No. 3 Baker, MD
LAPPER, No. 821-2 Micromatic, microflat, new '53
LATHE, AUTOMATIC Model 3D Gisholt Simplimatic, '41
LATHE, ENGINE 30" x 11' cc 17' bed Niles "Timesaver" heavy duty, new '44
LATHE, PRODUCTION, 20" x 90" cc 11' bed Le-Blond, MD
LATHE, TURRET, No. 2 W&S ram type, with new bar feed attach.
LATHE, TURRET, 4L Gisholt heavy duty, saddle, cross feeding
MILL, PRODUCTION, No. 33 Sundstrand Fluid-screw Rigidmil
MILL, VERTICAL, 62" King boring
MILL, HORIZONTAL, 4½" bar Universal Tri-Way
MILL, PLAIN, No. 5H Kearney & Trecker Milwaukee w/vert. attach.
MILL, ROTARY, 72" Ingersoll two spindle continuous
PLANER, 54" x 42" x 12' Gray double housing
PRESS, COINING, 600 ton No. 664 Toledo
PRESS, FORGING, 1000 ton Model 10C Ajax, S.S., all steel

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REBUILT—GUARANTEED ELECTRICAL EQUIPMENT

DIRECT CURRENT MOTORS
Adjustable and Constant Speed
(Suitable for MILL and STANDARD DUTY)

QU.	HP	MAKE	VOLTS	R.P.M.
1	3000	G.E.	600	90/180
2-N*	3000	Whse.	600	600
2-N*	2700	G.E.	415	280
1-N*	2500	Whse.	700	108/162
1-N*	2200	Whse.	600	92/132
2-N*	2000	G.E.	350	230/350
2-N*	1750	G.E.	600	200/300
3-N*	1500	Whse.	600	300/700
2-N*	1400	G.E.	250	165/300
4- *	800	Elliott	230	700/1200
6-N*	750	Whse.	250	300/700
1	750	Whse.	250	200/400
2- *	650	S.&S.	300	1000/1350
1- *	600	Al. Chal.	600	300/600
1- *	600	Whse.	250	110/220
2- *	300	Whse.	230	300/600
2	235	Whse.	230	325/975
1	150	Whse.	230	400/1200
1	125	Whse.	230	450/1050
3	125	Whse.	230	350/1125
1-N*	100	Whse.	250	350/700

N-New, unused—* heavy duty, pedestal bearing.

MOTOR GENERATOR SETS
3 phase—60 cycle

QU.	KW	MAKE	R.P.M.	D.C. VOLTS	A.C. VOLTS
2	3500	Al. Ch.	514	700	13800/4160
1	2500	G.E.	514	700	13800/4160
1	2100	G.E.	514	250	4600/2300
1	1750	Whse.	720	600	4000/2300
1	1500	G.E.	514	250	4600/2300
1	1325	Whse.	720	600	4000/2300
1	1250	G.E.	450	265	4160
1	1000	G.E.	900	600	4000/2300
1	850	G.E.	720	250	4000/2300
1	750	G.E.	900	250	4000/2300
1	500	G.E.	1200	250	4000/2300
1	400	G.E.	1200	250	4000/2300
1	300	Whse.	1200	250	4000/2300
1	250	Whse.	1200	250	4000/2300
1	200	G.E.	1200	250	4000/2300
1	175	G.E.	1200	250	4000/2300
1	150	G.E.	1200	250	2300/440
1	125	G.E.	1200	250	2300/440

T. B. MAC CABE COMPANY
4302 Clarissa St., Philadelphia 40, Penna.
Cable Address "Macsteel" Philadelphia, Pa.
Phone Davenport 4-8300

Activity Increases In New York

Used machinery dealers in New York say that business has definitely picked up.

Inquiries are now starting to materialize into orders.

■ There were some notable exceptions, but generally used machinery dealers in the New York area finished 1960 with business ranging from 15 to 25 pct under 1959.

But dealers haven't had much time to sit around and feel sorry for themselves. Business is already showing definite signs of perking up.

"Right after the first of the year things started popping," comments one dealer. "People I have been courting are opening up. And I have been able to arrange more inspections of my stuff."

Another dealer reports that a buyer walked in, cold, and after some negotiation purchased 50 Fellows gear shapers.

An interesting point in this sale: "He told me that my prices were 12 to 13 pct higher than most others around the country," reports this dealer. What prompted this sale was service, not price.

Inquiries Up—Dealers are further heartened because the rate of inquiries, which are usually in direct ratio to future sales, have picked up considerably in the last few weeks.

Several dealers point up some new, major factors in this market.

"You've got to beat the bushes harder than ever," insists one. "The business is there, but it won't come to you anymore." This dealer keeps his books on a fiscal year. He says his bush beating gave him a very good first half (August through December 1960).

Press for Testing — Another dealer reports, "I had some people in looking at a very heavy press the other day. The initial inquiry was a month or so ago. The interesting thing is that this is a research company.

"They are doing research on die composition and design and need the press for testing."

This dealer believes that there will be increasing used machinery sales to research companies in 1961 and thereafter. Used machinery will get a large part of this market, he feels, because many times researchers will modify the equipment for their highly specialized needs, and used machinery is clearly lower cost.

Leasing Is Catching — Another factor, say dealers, is the trend toward leased machinery. The new machinery people started this, and many used equipment dealers initiated programs in self defense. They are starting to catch on. And, they will account for a bigger share of business in the future.

Dealers are generally conservative about the bounds of the current pickup. They say it indicates business will definitely be better this year. But they insist that how much better, and for how long, depends on the condition of the economy as a whole.

Some suggest that, to date, the pickup is based almost completely on the fact that many buyers are now operating with new budgets.

FURNACES

From CRAMET TITANIUM CORP.

CHATTANOOGA, TENNESSEE

WESTINGHOUSE ELECTRIC DISTILLATION FURNACE, 3ph., TOP ZONE—105 KW, MID ZONE—70 KW, BOTTOM ZONE—125 KW, w/vacuum bell, cooling bell, transformers, vacuum pumps, and instruments.

HEAVY DUTY ELECTRIC DISTILLATION FURNACE, 115 V., 3ph., 350 KW, TYPE HD, w/vacuum bell, cooling bell, transformers, vacuum pumps and instruments.

WESTINGHOUSE GAS MAGNESIUM MELTING FURNACE, TEMP. 1600° F., gas cap. 2400, NATURAL GAS 1000 btu per cu. ft., air pressure 16 oz. gas pressure 1# per sq. inch.

HEAVY DUTY MELTING FURNACE, 210 KW, 230 V., TEMP. 1050° C.

WESTINGHOUSE ELECTRIC FURNACE, MAGNESIUM REDUCTION, MAX. TEMP. 1600° F. 4/ZONE = ZONE 1: 90 KW, 220 V., 3ph. ZONE 2: 60 KW, 220 V., 3ph. ZONE 4: 15 KW, 110 V. 1ph.

REPRESENTATIVES ON SITE

Specifications and Quotations Available on Request

SOUTHERN FOUNDRY SUPPLY INC.

P. O. BOX 566 CHATTANOOGA, TENNESSEE

AMHERST 7-6785

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34—COLD ROLLING MILLS

1—8" x 4" Standard w. Coilers 25 HP DC Motor
15—8" x 6" Standard w. Coilers 25 HP DC Motor
14—8" x 8" Waterbury-Farrel—25 HP DC Motor
2—8" x 8" Waterbury-Farrel (roll. brg.) 25 HP Motor
2—10" x 10" Blake & Johnson 40/65 HP DC Motor

All Mills with variable speed drives & Coilers, Edge Rollers, etc.

CURRY & HUDSON ASSOCIATES, INC.

ONE GATEWAY CENTER, PITTSBURGH 22, PA.

VARIABLE VOLTAGE DRIVES

3 PHASE 60 CYCLE

Quan.	Size	Description
2	3000 HP	DC MOTORS—525 V. 600 RPM Whse. M.G. Sets—2500 K.W. Whse., 2300/4160 V.
1	2750 HP	DC MOTOR 450 V. 300 RPM Elliott 2200 K.W., Gen. Elec. 3 unit 450 V. DC Gen. with 3000 HP 720 RPM, 2300 V. AC Motor and Etc.
1	2250 HP	DC MOTOR 600 V. 400/500 RPM, G.E. M.G. Set—2000 K.W. G.E. AC Motor—2300 V.
1	1500 HP	DC MOTOR 600 V. 600 RPM Whse. M. G. Set. 1500 K.W. G.E. 13,200 V.
1	1500 HP	DC MOTOR 600 V. 300/700 RPM Whse. M.G. Set—1500 K.W. G.E. 13,200 V.

For listing of Motors, Generators, Transformers, M.G. Sets, Rectifiers, Mill Motors, etc.

See last week issue.

Write — Phone — Wire

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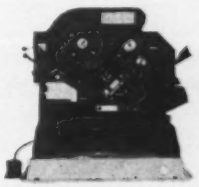

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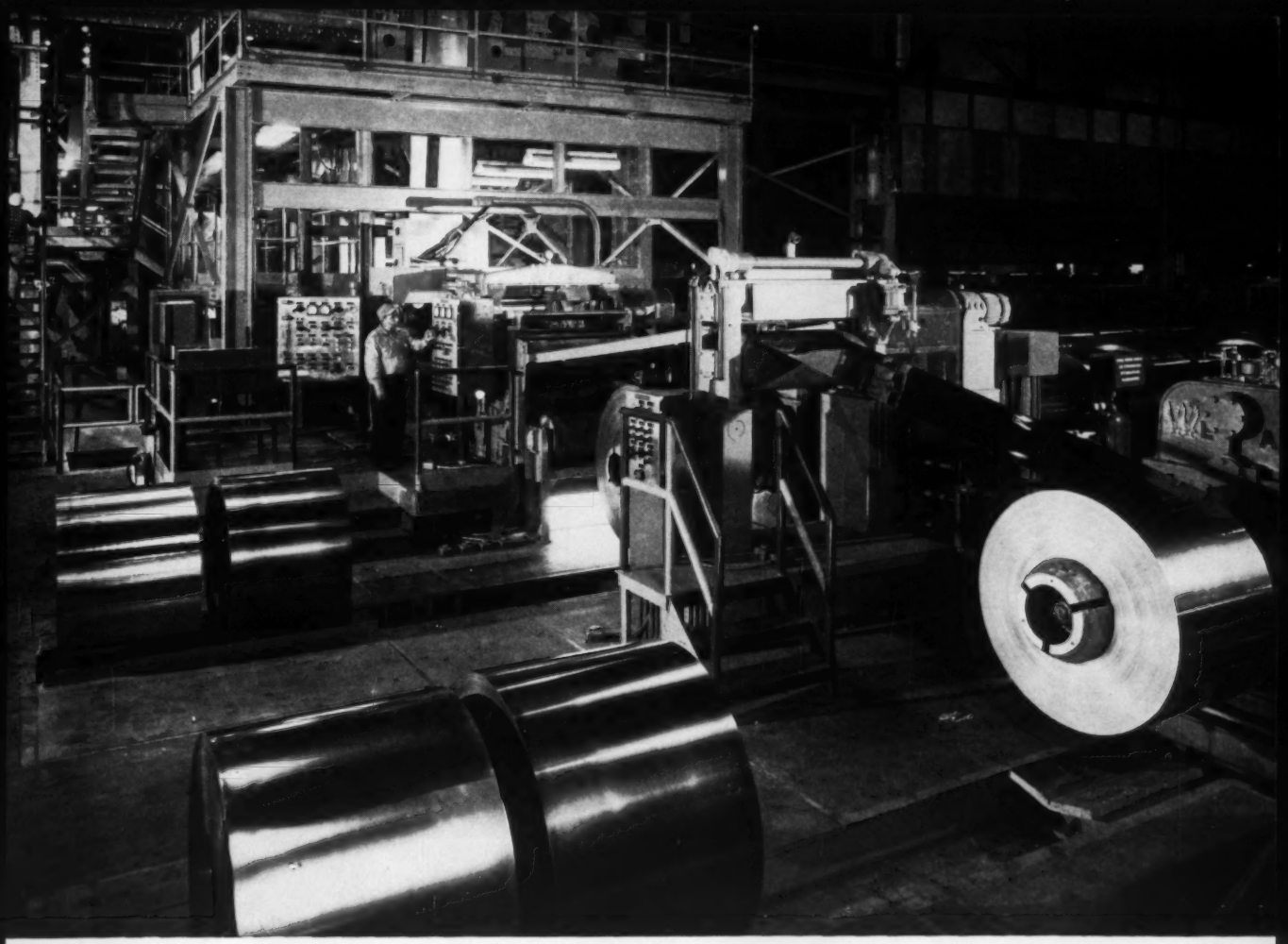

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This modern line is among the first to employ an electronic data-logging system to provide a "process profile" of all coiled tin plate. Other new features include improved conductor roll mountings for more rigid support, easily replaced cartridge seals for submerged rolls, and air cylinder-controlled hold-down rolls for faster, more convenient adjustment.

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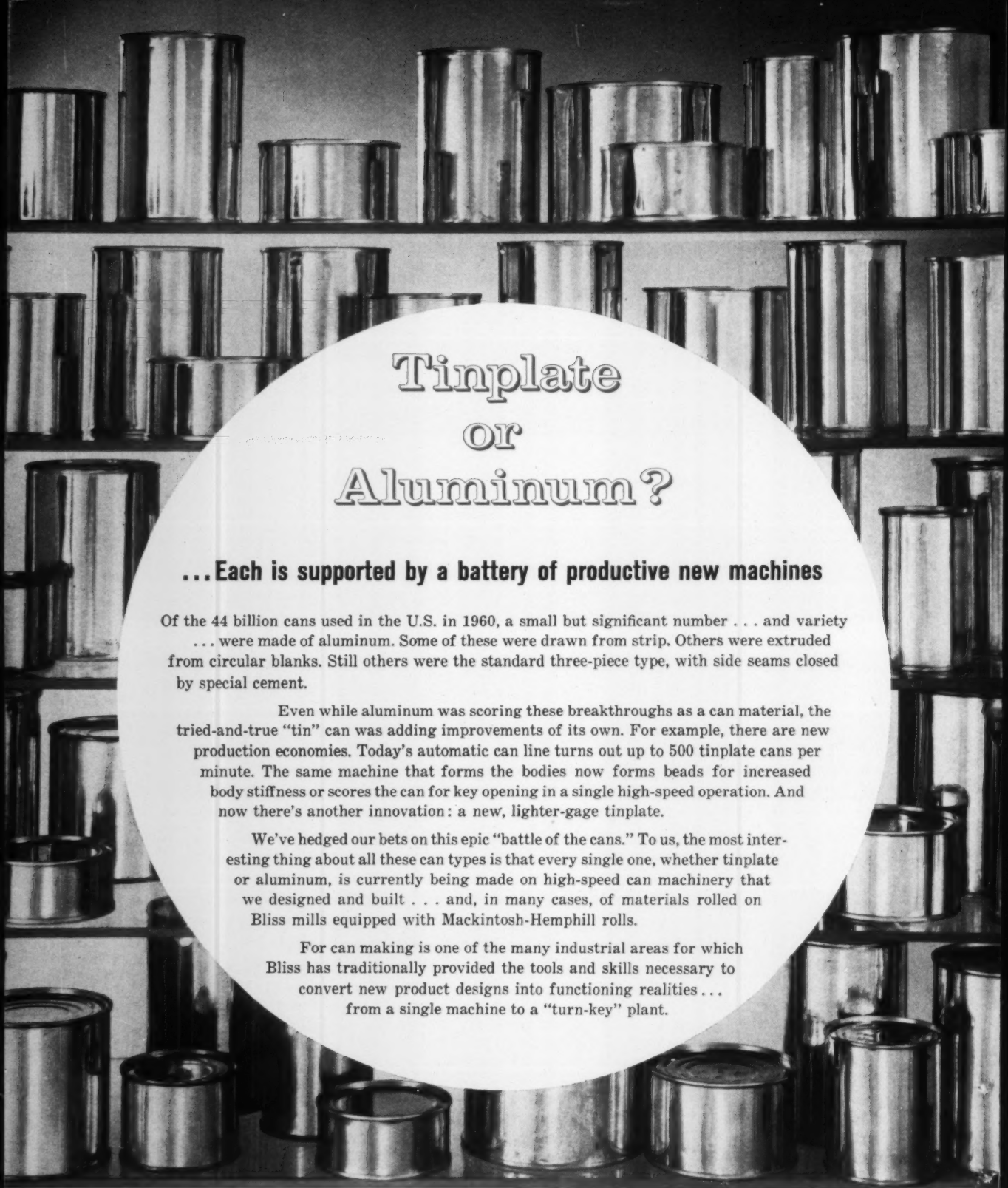

Tinplate or Aluminum?

...Each is supported by a battery of productive new machines

Of the 44 billion cans used in the U.S. in 1960, a small but significant number . . . and variety . . . were made of aluminum. Some of these were drawn from strip. Others were extruded from circular blanks. Still others were the standard three-piece type, with side seams closed by special cement.

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